UNIVERSITY OF VERMONT

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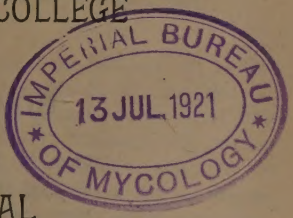

VERMONT AGRICULTURAL

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April 1906

Disease Resistance of Potatoes

By.
Wm. Stuart

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BULLETIN 122—DISEASE RESISTANCE OF POTATOES

WM. STUART

Since the publication by the writer in May, 1905,[1] of the results of a somewhat limited study of disease-resistance of potatoes, the scope of the work has been greatly enlarged through co-operation with the United States Department of Agriculture. Through this agency the Station has become the recipient of an extensive collection of European and American varieties, selected largely on the recommendation of originators, seedsmen and potato specialists as possessing powers of disease-resistance. The European varieties were collected by the station botanist, acting as field agent of the Bureau of Plant Industry of the National Department. During the summer of 1904 he personally visited the larger English and continental growers, studied the character of potato maladies with special reference to disease-resistance, and has embodied the results of his observations in a departmental bulletin.[2] The larger part of the American varieties were selected as a result of replies to a circular letter of inquiry issued to originators, seedsmen, etc. The present report is one of progress only, and not a final expression of opinion as to the resistant or non-resistant qualities of any variety. While the work has been directly under the writer's charge, he is deeply indebted to his associate the station botanist for helpful suggestions as to details.

OBJECT AND SCOPE OF THE TRIALS

The study of disease-resistance was of a three-fold nature. It had to do with the resistance of:

1. The vines to blight;
2. The tubers to rot;
3. The tubers to scab.[3]

The seed was planted on two distinct types of soil, a light sandy loam and a heavy clay loam, the more thoroughly to test the varieties. The latter soil subjected the tubers to unfavorable conditions as regards rot, which, owing to the frequent September rains, were accentuated, affording an unusually good opportunity to study the influence of soil upon the development of potato rot.

The several varieties in the collection were given field numbers from 500 to 653 inclusive. Nos. 500 to 518 inclusive were secured from Germany; 519 to 523 from Holland; 524 to 529 from France; 530 to 598

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[1]Vt. Sta. Bul. 115 (1905).

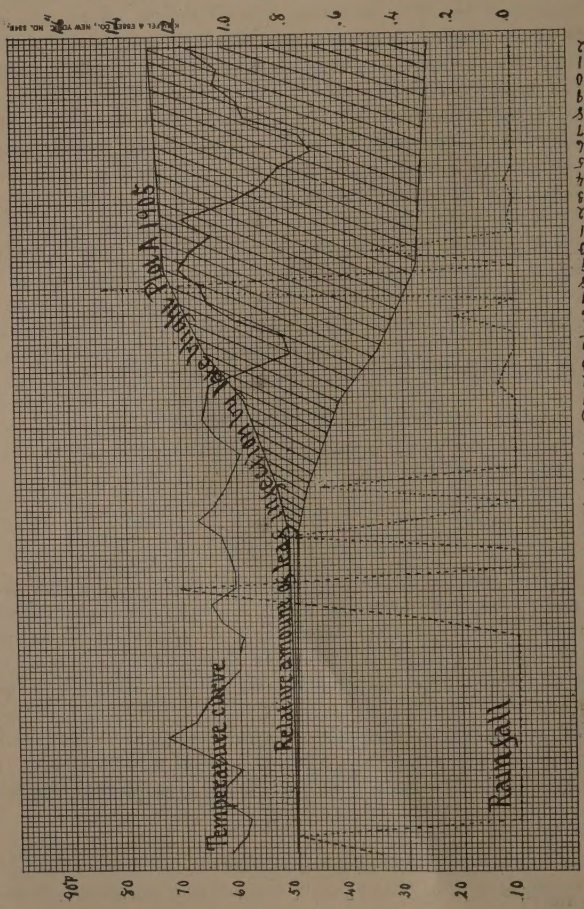
[2]Jones, L. R. Disease-resistance of potatoes. U. S. Dept. Agr., Bu. Pl. Ind., Bul. 87 (1905). Abstracted in Vt. Sta. Rpt., 18, pp. 264-267 (1905).

[3]The data in hand as to scab resistance is not such as warrants discussion at this time.

from England and Scotland; 599 to 653, with the exception of 636, from Canada or the United States. Nos. 1 and 9 were also American varieties.

CULTURAL DETAILS

The sandy loam piece was planted May 22-23, using the full collection of European and American varieties. Only about half of the varieties were used on the clay loam, owing to lack of seed or its poor



condition, planting being done on May 29. The tubers were planted about three inches deep and three feet apart each way. Both fields were in good tilth and were given four horse cultivations and two hand hoeings during the growth of the crop. The vines were sprayed early in the season with arsenate of lead or paris green, and later received dry applications of paris green and air-slaked lime mixed in the proportion of one to twenty.

DISEASES OF THE VINES

Frequent and careful observations were made as to the presence of fungous diseases and the relative amount of infection from each.

EARLY BLIGHT

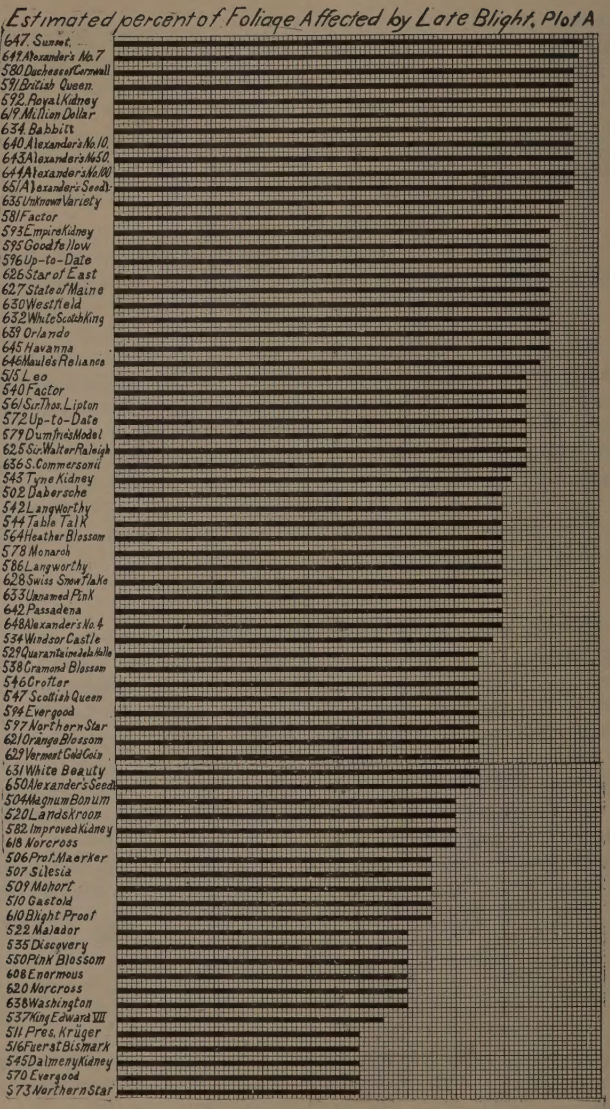
More or less evidences of early blight (*Alternaria solani*) were found on some of the varieties on the sandy loam, but on none did it do material damage, 12 percent being the highest recorded amount of affected foliage. In most cases the harm done was but slight. No notes were taken as to the occurrence of early blight on the clay loam, hence there is no corroborative data to indicate whether varieties having from 10 to 12 percent of foliage affected were really more susceptible, or whether the result was more or less accidental. These data appear in Table I, pages 122-124.

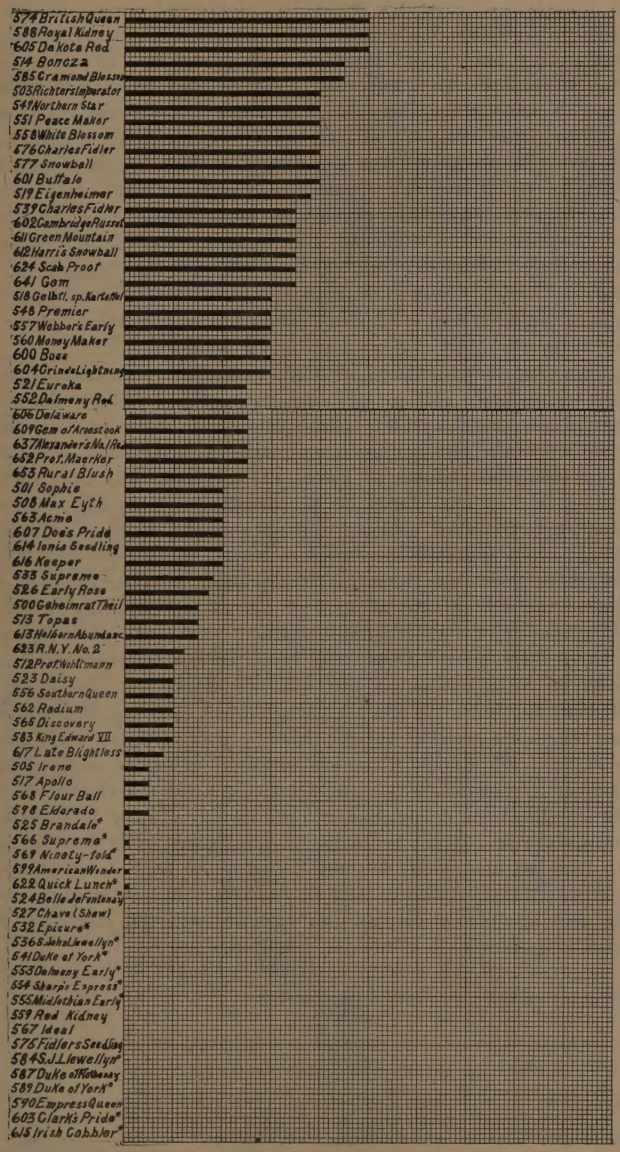
TIP BURN

Tip burn occurs almost every season, but is usually more abundant when the climatic or soil conditions are unfavorable to the best development of the plant. It is primarily due to a physiological derangement of the nutritive system of the plant, is first evidenced by a wilting and yellowing of the tip of the leaf and ends in the drying up and blackening of the affected cells. This malady is not apt to involve more than one-third of the leaves, save in severe cases. Several of the varieties on the sandy loam suffered more or less, yet, while more in evidence than was the early blight, it was seldom sufficiently severe to cause material injury. The maximum estimate of affected leaves—40 percent—was recorded for Acme and Ninety-fold, both English varieties. The Acme plants were propagated in the greenhouse and transferred to the open field. It is not unlikely that the check received in transplantation induced physiological derangement of the plant, thus tending to an increase in the amount of tip burn.

LATE BLIGHT

Late blight (*Phytophthora infestans*) was first seen about August 10 on Delaware and Green Mountain foliage. It spread so slowly that it was not considered an appreciable factor until some five days later.


Estimated percent of Foliage Affected by Late Blight, Plot A
647 Sunset
642 Alexander's No. 7
580 Duchess of Cornwall
591 British Queen
692 Royal Kidney
619 Million Dollar
634 Babbitt
640 Alexander's No. 10
643 Alexander's No. 50
644 Alexander's No. 100
651 Alexander's Seedl.
635 Unknown Variety
581 Factor
593 Empire Kidney
595 Good Fellow
576 Up-to-Date
626 Star of East
627 State of Maine
630 West Field
632 White Scotch King
639 Orlando
645 Havanna
646 Maule's Reliance
515 Leo
540 Factor
561 Sir Thos. Lipton
572 Up-to-Date
579 Dumfries Model
625 Sir Walter Raleigh
636 S. Commersonii
543 Tyne Kidney
502 Dabersche
542 Langworthy
544 Table Talk
564 Heather Blossom
578 Monarch
586 Langworthy
628 Swiss Snow Flake
633 Unnamed Pink
642 Passadena
648 Alexanders No. 4
534 Windsor Castle
529 Quarantaine de la Halle
538 Cramond Blossom
546 Crofter
547 Scottish Queen
594 Evergood
597 Northern Star
621 Orange Blossom
629 Vermont Gold Coin
631 White Beauty
650 Alexander's Seedl.
504 Magnum Bonum
520 Landskroon
582 Improved Kidney
618 Norcross
506 Prof. Maerker
507 Silesia
509 Mohort
510 Gaetold
610 Blight Proof
522 Malador
535 Discovery
550 Pink Blossom
608 Enormous
620 Norcross
638 Washington
537 King Edward VII
511 Pres. Kruger
516 Fuerst Bismark
545 Dalmeny Kidney
570 Evergood
573 Northern Star


574 British Queen
588 Royal Kidney
605 Dakota Red
514 Boncza
585 Cramond Blossom
503 Richters Imperator
541 Northern Star
551 Peace Maker
558 White Blossom
576 Charles Fidler
577 Snowball
601 Buffalo
519 Eigenheimer
539 Charles Fidler
602 Cambridge Russet
611 Green Mountain
612 Harris Snowball
624 Scab Proof
641 Gem
518 Gelbfl. sp. Kartoffel
548 Premier
557 Webber's Early
560 Money Maker
600 Boss
604 Crimea Lightning
521 Eureka
552 Dalmeny Red
606 Delaware
609 Gem of Aroostook
637 Alexanders No. 1 Pe
652 Prof. Maerker
653 Rural Blush
501 Sophie
508 Max Eyth
563 Acme
607 Doe's Pride
614 Ionia Seedling
616 Keeper
538 Supreme
526 Early Rose
500 Geheimrat Thiel
513 Topas
613 Helfern Abundance
623 R. N. Y. No. 2
512 Prof Wohltmann
523 Daisy
556 Southern Queen
562 Radium
565 Discovery
583 King Edward XII
617 Late Blightless
505 Irene
517 Apollo
568 Flour Ball
598 Eldorado
525 Brandale*
566 Supreme*
569 Ninety-fold*
599 American Wonder*
622 Quick Lunch*
524 Belle de fontenay*
527 Chave (Shaw)
532 Epicure*
536 S. John Llewellyn*
541 Duke of York*
553 Dalmeny Early*
554 Sharp's Express*
555 Midlothian Early*
559 Red Kidney
567 Ideal
575 Fidlers Seedling
584 S. J. Llewellyn*
587 Duke of Rothesay
589 Duke of York*
590 Empress Queen
603 Clark's Pride*
615 Irish Cobbler*

In fact this disease made little headway during the remainder of August, the weather conditions not being propitious to its development. (Note Table II, temperature and rainfall August 15 to October 2, page 124, and Chart I, page 108, illustrating their fluctuations as well as the rate of progress of the late blight). In early September, however, owing to frequent rains the fungus became abundant and the malady unusually virulent. From that time on to the close of the month its ravages were seen on all vines susceptible to infection which were not protected by fungicides. The appearance of the experimental plots during this period was extremely interesting, because of an occasional variety whose vines apparently possessed marked resistant qualities, standing out a mass of green amidst the dying foliage of other varieties.

Two sets of observations on blight resistance were taken; one, a rough eye estimate of the relative percent of green vines, the other, a careful examination of the foliage in order to estimate the relative percent of leaves affected by late blight,—no small task when over 150 varieties, each having 35 plants, are involved. The first method, though a less accurate index of the character and amount of disease present, may and often does indicate more clearly the extent of foliage injury, thereby enabling one the more readily to estimate the relative susceptibilities of each variety. Such a determination, however, presupposes the taking into account of the normal ripening period of each variety under observation. Some of those under survey were normally early maturing varieties, and for the purposes of experimental study in connection with late blight and rot should not be included. In Tables III and IV, pages 125-128, showing percentages of vines remaining green at various dates on both soils, the early maturing varieties are marked *, the medium early or second early varieties †, and, four varieties, which on account of a limited amount of seed were started in the greenhouse, ‡. The results attained with varieties thus marked should not be compared too rigidly with those obtained with later maturing ones or those grown under normal conditions.

An examination of the data in the tables just referred to shows that, barring Rust Proof, all the varieties showing relatively high disease-resistance were of German and Dutch origin.

The ten varieties showing greatest resistance to disease without particular reference to late blight, were:

ON SANDY LOAM		ON CLAY LOAM	
Field number	*and name*	*Field number*	*and name*
517	Apollo,	517	Apollo,
501	Sophie,	512	Prof. Wohltmann,
512	Prof. Wohltmann,	507	Silesia,
505	Irene,	501	Sophie,
508	Max Eyth,	511	Pres. Krüger,
523	Daisy,	516	Fuerst Bismark,
500	Geheimrat Theil,	523	Daisy,
516	Fuerst Bismark,	9	Rust Proof,*
521	Eureka,	508	Max Eyth,
511	Pres. Krüger	509	Mohort.

Apollo stood at the head of the list on both soils, Prof. Wohltmann third and second, and Sophie second and fourth. For some reason Silesia on the clay showed much greater disease-resistance than it did on the sandy loam.

LEAF INFECTION WITH LATE BLIGHT

Table V, on pages 129-131, affords somewhat confusing data. In almost every instance in which no affection was observed, the variety is an early or medium maturing one. It is especially interesting to note in this connection that Apollo shows very little actual infection by late blight. Five of the ten varieties showing high vine resistance to fungous diseases had 20 percent or less of their foliage infected by late blight. Mentioned in order of leaf infection they are as follows: Apollo, 5 percent; Daisy, Prof. Wohltmann, 10 percent; Max Eyth, Sophie, 20 percent.

Eleven varieties were estimated to have 95 percent or more of their foliage thus affected, being: Sunset, 97 percent; Alexander's No. 7,[2] 96 percent; Duchess of Cornwall,[1] British Queen,[1] Royal Kidney,[1] Million Dollar, Babbitt, Alexander's No. 10,[2] Alexander's No. 50,[2] Alexander's No. 100,[2] Alexander's Seedling,[2] 95 percent.

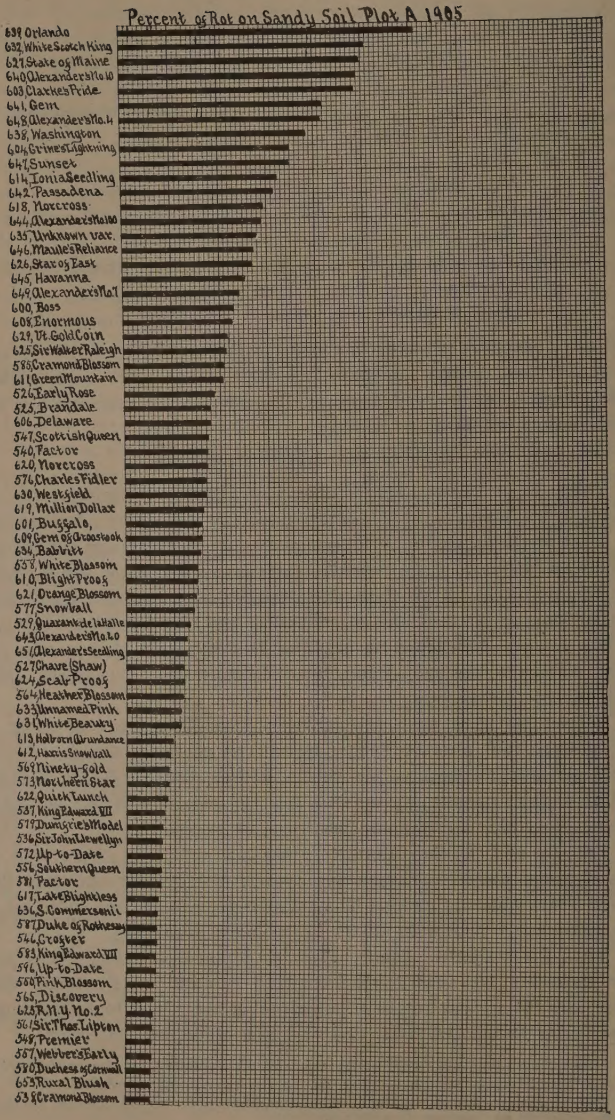
Babbitt and Million Dollar (American varieties) were said to possess some disease-resistant qualities. A 95 percent leaf infection hardly bears out this claim. The relative percent of leaf infection is also graphically shown in Chart II on pages 110-111.

That the varieties *Apollo*, *Prof. Wohltmann*, *Sophie*, *Daisy* and *Max Eyth* are strongly disease-resistant is clear. (Duplicate data tables III, IV, on the relative resistance of the vines to fungous diseases; table V and Chart II, observed late blight leaf infection).

*Rust Proof was not included in the varieties planted on the sandy soil.

[1]Of English and Scotch origin; all others of American origin.

[2]Seedlings not as yet regularly offered to the trade. They should, perhaps, not be seriously considered in this connection.


Percent of Rot on Sandy Soil Plot A 1905
639 Orlando
632 White Scotch King
627 State of Maine
640 Alexanders No 10
603 Clarkes Pride
641 Gem
648 Alexanders No. 1
638 Washington
604 Grimes Lightning
647 Sunset
614 Ionia Seedling
642 Passadena
618 Norcross
644 Alexanders No 10
635 Unknown var.
646 Maules Reliance
626 Star of East
645 Havanna
649 Alexanders No 7
600 Boss
608 Enormous
629 Vt. Gold Coin
625 Sir Walker Raleigh
588 Crawford Blossom
611 Green Mountain
526 Early Rose
525 Brandale
606 Delaware
547 Scottish Queen
540 Factor
620 Norcross
576 Charles Fidler
630 Westfield
619 Million Dollar
601 Buffalo
609 Gem of Crosstook
634 Babbitt
638 White Blossom
610 Blight Proof
621 Orange Blossom
577 Snowball
529 Guarantede la Halle
643 Alexanders No 20
651 Alexanders Seedling
527 Chave (Shaw)
624 Scalr Proof
564 Heather Blossom
633 Unnamed Pink
631 White Beauty
613 Holborn Grundance
612 Harris Snowball
567 Ninety-fold
573 Northern Star
622 Quick Lunch
587 King Edward VII
577 Dumgrieds Model
536 Sir John Llewellyn
572 Up-to-Date
556 Southern Queen
581 Factor
617 Late Blightless
636 S. Commerxsenii
587 Duke of Rothesay
544 Crosier
583 King Edward VII
596 Up-to-Date
588 Pink Blossom
565 Discovery
623 R.N.Y. No. 2
561 Sir Thos Lipton
548 Premier
587 Webbers Early
580 Duchess of Cornwall
653 Rural Blush
638 Crawford Blossom

591 British Queen
541 Duke of York
543 Tyne Kidney
628 Swiss Snowflake
552 Dalmeny Red
561 Ideal
562 Radium
511 Pres. Kruger
503 Richters Imperator
601 Does Pride
628 Belle de Juillet
605 Dakota Red
589 Duke of York
531 Ninety-fold
588 Royal Kidney
504 Pros. Maerker
500 Geheimrat Thiel
555 Midlothian Early
574 British Queen
624 Belle de Pontenay
534 Windsor Castle
615 Irish Cobbler
596 Langworthy
602 Carnbridge Russet
566 Supreme
599 American Wonder
626 Landskroon
568 Flour Ball
592 Royal Kidney
501 Sophie
514 Bonza
563 Acme
508 Max Eyth
545 Dalmeny Kidney
559 Red Kidney
549 Northern Star
593 Empire Kidney
551 Peace Maker
616 Keeper
544 Table Talk
597 Northern Star
650 Alex-Seedling
653 Pros. Maercker
518 Gelbfl-sp Karneggi
580 Empress Queen
598 Eldorado
535 Discovery
560 Money Maker
602 Daberesche
522 Malador
575 Goodfellow
507 Silesia
512 Pros. Wohltmann
519 Eigenheimer
518 Monarch
537 Alex-No 1 Red
516 Fuerst Bismark
542 Langworthy
510 Bastfold
505 Irene
521 Eureka
570 Evergood
513 Topas
504 Magnum Bonum
509 Mohort
515 Leo
517 Apollo
525 Daisy
532 Epicure
539 Supreme
534 Charles Fidler
553 Dalmeny Early
564 Express
516 Fidlers Seedling
512 Improved Kidney
514 Sir John Llewellyn
594 Evergood

The infection of *S. Commersoni* by late blight is corroborative of observations made by other American investigators[1] last year, and shows that the immunity claimed for it by M. Labergerie and others is is not well founded; or that at least it does not apply to our conditions. As viewed by the writer, this species has but little to commend itself to the plant breeder unless some of the various sports that have emanated from it sustain the claims made for them by those with whom they have originated.

DISEASES OF THE TUBERS

ROT RESISTANCE

While it is, of course, eminently desirable that varieties be secured having marked vine resistance to fungous diseases, it is of still greater importance to obtain those possessing marked tuber resistance to rot. Vine resistance does not in every instance mean tuber resistance. This fact is well illustrated by Rust Proof. Neither does vine infection by the late blight fungus necessarily entail serious tuber rot. As a rule vine and tuber resistance are correlated; but there are numerous exceptions to the rule.

In order to study this relationship a careful examination of the tubers was made as soon after digging as possible and the percentage of rot determined. These data (Tables VI and VII, pages 131-133, graphically shown in Charts III and IV) indicate that the varieties which show the greatest late blight infection of the leaves (see Table V, pages 129-131) were not the worst to rot. This is especially true of the three British varieties. On the sandy soil Orlando, [1] White Scotch King, State of Maine, Alexander's No. 10,[2] and Clarke's Pride were the least resistant to rot, followed closely by Gem,[2] Alexander's No. 4,[2] Washington,[2] Crine's Lightning and Sunset.[2]

On the clay soil Chave (Shaw), Early Rose, Unnamed Seedling, Ionia Seedling, Quarantaine de la Halle, Brandale, Green Mountain, Duke of York, Gem of Aroostook, and Vermont Gold Coin head the list in the order named as the least resistant to rot. The first, second, fifth and sixth named were of French origin, while Early Rose, though a variety of American origin, was of French grown seed. Ionia Seedling was claimed and advertised by its introducer, E. F. Dibble of Honeoye Falls, N. Y., to be blight proof. There were but three varieties on the clay and but ten on the sandy loam which showed a larger percentage of rot. A variety showing 84 percent of rot can hardly be claimed as disease-resistant. It is interesting to note that many

[1]J. R. Lawrence, N. E. Farmer, Feb. 24, 1906, p. 4. Hiram Presley, Port Huron, Mich., in personal letter Dec. 18, 1905.

[2]Received for trial from O. H. Alexander, Charlotte, Vt., without special commendation as to disease-resistance.

of the varieties which rotted badly are early maturing. Such would naturally be expected to show considerable freedom from rot. Four of the six which proved inferior in this respect are early maturing varieties. Apollo, Daisy, Prof. Wohltmann, Mohort, Irene, Max Eyth (German varieties) and others showing marked vine resistance were comparatively free from rot.

The following list displays the American varieties showing the greatest resistance to rot on the sandy and the clay loams. Five varieties appear in both lists, thus giving some evidence that they do possess a certain degree of disease-resistance to rot:

SANDY LOAM		CLAY LOAM	
Field number	*and name*	*Field number*	*and name*
637	Alexander's No. 1 Red,[1]	616	Keeper,
616	Keeper,	654	June,
599	American Wonder,	605	Dakota Red,
615	Irish Cobbler,[2]	607	Doe's Pride,
605	Dakota Red,	627	State of Maine,
607	Doe's Pride,	617	Late Blightless,
653	Rural Blush,	613	Holborn Abundance,
623	R. N. Y. No. 2,	599	American Wonder,
617	Late Blightless,	619	Million Dollar,
622	Quick Lunch,[1 2]	628	Swiss Snowflake.

RELATION OF SOIL TO ROT

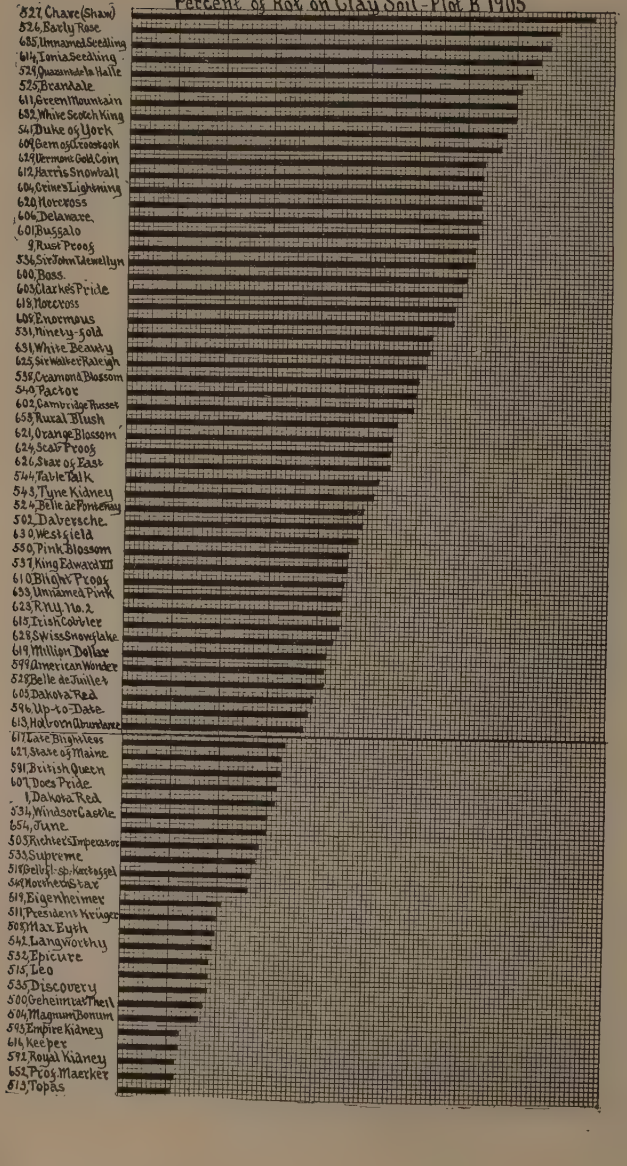
The frequent rains of the early fall favored the spread of late blight and rot, while the selection of a rather light sandy loam and of a heavy moist clay soil enables under the circumstances a good comparison. Tables VI and VII, pages 131-133, and, more particularly, graphic Charts III and IV, show clearly that the tubers were much more subject to rot on the clay than they were on the sandy soil. The average percent of decayed tubers in 89 varieties grown on both soils was less than 9 percent on the sandy loam as against 40 percent on the clay loam. In other words, there was over four times as much rot on the clay as there was on the sandy soil. Clearly, heavy moist clay land should not be selected for potato culture where lighter loams are available.

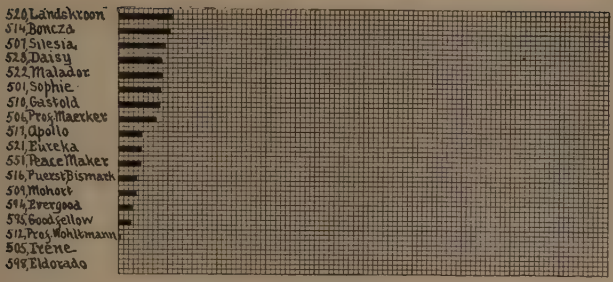
COMPARATIVE ROT RESISTANCE OF EUROPEAN AND AMERICAN VARIETIES

The evident high rot-resistant qualities of most of the German and Dutch varieties seemed to invite a closer study of the comparative resistance of the varieties as a whole from different sources. As a result of this analysis of the data presented in Tables VI and VII,

[1]Not grown on clay soil.
[2]Early maturing varieties.

Percent of Rot on Clay Soil - Plot B 1905





it was found that on both the sand and clay soil the Dutch, German and English-Scotch varieties showed much less rot than did the French and American varieties, the proportionate amount of rot on the sandy soil being in the order mentioned. On the clay soil the only change was in the American and French, the latter showing most rot. The average percentages of rot as presented below shows quite clearly that the rot-resistance of the Dutch and German varieties is decidedly superior to that of the others tested. While the English-Scotch varieties show considerably more rot than the Dutch and German, the amount is only approximately one-half of that found in the French and American varieties. The high percent of rot in French and American varieties would seem to indicate that American growers at least have not so seriously considered the question of disease-resistance in the production of new varieties. In other words, American varieties have not thus far been bred for disease-resistance.

Source of seed	*Sandy soil*	*Clay soil*	*Average*
Holland	.4%	10.8%	5.6%
Germany	1.4	13.9	7.7
Scotland	2.9	34.1	18.5
England	4.9	31.3	18.1
France	11.3	73.1	37.2
America	20.	55.1	37.6

CHARACTER OF VINES AS RELATED TO FUNGOUS DISEASES

In general, varieties having a strong, woody, moderately branched upright haulm and medium sized, rather thick, more or less crumpled, firm, hairy leaves were found more resistant to disease, especially late blight, than those possessing rather weak, partially woody, much branched, decumbent haulms, with rather large, thin, smoothish, soft leaves. In brief, varieties having an upright habit of growth, moderately branched, with firm, hairy, medium sized leaves,

are much more likely to prove resistant to late blight than are those with large smooth, flabby leaves and decumbent stems.

ADDITIONAL VARIETAL STUDIES IN 1905

A few varieties were grown in continuation of the work outlined last year[1] on another piece of ground. These varieties consisted of about a dozen of named cultivated ones grown the previous season; some 50 seedlings selected from over 500 grown in 1904; and a large number of seedlings of *S. polyadenium*, *S. verrucosum*,[2] *S. tuberosum*[2] (wild species) and plants from tubers of *S. stoloniferum*, *S. maglia*[3] and *S. etuberosum*.[3]

CULTURAL AND SOIL NOTES

The seedling varieties were started in the greenhouse and potted off and transplanted to the open ground in the usual manner. The same treatment was also accorded to *S. maglia* and *S. etuberosum*, owing to the fact that a very limited number of tubers were received. With these exceptions the plot was planted on May 27 and the plants received about the same treatment as was accorded to those on the sand and the clay soils.

The soil used in these supplementary trials was of a rather coarse gravelly clay loam, quite retentive of moisture. Although on somewhat high land, its northern exposure, with prevailing moist weather, furnished very favorable conditions for the infection of vines by late blight and of tubers by rot.

LATE BLIGHT INFECTION

The late blight did not appear quite as early as on the other fields, but when it did start it was as virulent an attack as that on the clay loam piece. No attempt was made to estimate the damage of foliage affected by the late blight fungus, but observations were taken on the apparent resistance of the vines as indicated by their greenness. The data secured from these notes appear in Table VIII. Only six of the selected seedlings from the 1904 crop are included, since these only show well-marked disease-resistant qualities of vine.

Discovery and Rust Proof stand out quite prominently among the cultivated varieties; June shows about the same resistance as in 1904, and somewhat greater than it did on the moist clay loam; Mexican did not do as well as in 1904. *S. stoloniferum*, as in previous trials, proved a weak grower and seems to offer little promise of being useful in increasing the vigor of cultivated varieties by hybridization. *S.*

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[1] Vt. Sta. Bul. 115 (1905).

[2] Received from Sutton & Sons, Reading, Eng., and the Kew Gardens, Kew, Eng.

[3] Collected in 1904 by Mr. C. G. Pringle, to whom the writer is indebted.

polyadenium, *S. verrucosum*, and the wild species of *S. tuberosum* were not affected by the late blight, and, so far as observed, although no insecticides were used on them, they were not troubled by the Colorado or flea beetles. Tubers were produced very sparingly on *S. polyadenium* and *S. tuberosum* in the field, and none at all on *S. verrucosum*, although it is supposed to be a tuber-bearing species in its native habitat.

The value of these species, if any, in the development of disease-resistant varieties, lies wholly in the possibility of hybridizing them with some of the most promising cultivated ones. The percentages of rot were noted and appear in Table IX, page 134.

RELATIVE SUSCEPTIBILITY TO ROT OF TUBERS FORMED DEEP OR SHALLOW

In an editorial in New England Homestead of March 3 last, Mr. J. N. Isham is quoted as claiming greater susceptibility of tubers to rot when formed near the surface of the ground and advocating hilling up around the plants at the last cultivation, the idea being to cover the newly formed tubers with soil to a depth of four or more inches. The claim is advanced that when such cultural care is given, the tubers are not as subject to rot, because of lessened likelihood of infection from the fungus spores falling upon the surface of the soil. The writer cannot at present either affirm or deny the statement, but from observations made upon deep and shallow tuber-forming varieties the past season, the indications are that there is no very definite connection between the extent of the rot and the depth at which the tubers are set. Out of 57 varieties showing good rot-resisting qualities, 45 were shallow and 12 deep forming tubers; while out of 31 varieties showing over 40 percent of rot on the clay soil, there were 21 shallow and 10 deep. The latter showing apparently favors the deep tuber-forming varieties, but there were 104 shallow tuber-forming varieties and 50 deep tuber-forming ones included in the test, hence the proportion is practically the same—about 20 percent in each case.

Notwithstanding this apparently negative evidence the subject is one which is worthy of careful study. Deep planting of seed tubers, say from four to six inches, may tend to lessen tuber infection from late blight. The presumption at least seems to be a logical one. It is believed, however, that while depth of soil covering may be a factor in inducing or preventing rot, it is but a minor one. The primal cause must be regarded as a greater predisposition of the tubers of one variety over those of another to the attack of the fungus.

Disease resistance is important; but commercial standards are based on prolificacy, appearance and edibleness, qualities in which the German and Dutch varieties are not pre-eminent, as judged by one year's trials and by American standards. The writer does not at present recommend them to American growers.

TABLE I. PERCENT OF LEAF INFECTION WITH EARLY BLIGHT AND TIP BURN, SANDY LOAM SOIL, 1905

FIELD NUMBER AND NAME[1]	AUG. 15		AUG. 21		AUG. 30	
	Early blight	Tip burn	Early blight	Tip burn	Early blight	Tip burn
500 Geheimrat Theil	..	5	..	..	..	7
501 Sophie	..	3	..	..	..	5
502 Dabersche	..	2	2	3	..	10
503 Richter's Imperator	..	..	2	2	..	5
504 Magnum Bonum	3	..	5	15	..	..
505 Irene	..	..	..	1	..	5
506 Prof. Maerker	..	..	..	1	..	2
507 Silesia	..	..	2	5	..	15
508 Max Eyth	..	..	..	7	..	10
509 Mohort	3	..	..	6	..	..
510 Gastold	..	..	2	2	..	7
512 Prof. Wohltmann	..	..	2	2	..	4
511 Pres. Krueger	..	..	..	2	..	4
513 Topaz†	..	5	8	8	..	25
514 Boncza	..	3	..	10	..	15
515 Leo	..	..	2	2	..	2
516 Fuerst Bismark	..	..	3	7	..	10
517 Apollo	..	..	3	4	..	7
518 Gelbfleischige Sp. Kartoffel	..	..	2	3	..	10
519 Eigenheimer*	..	..	..	10	..	15
520 Landskroon†	..	3	5	17	..	22
521 Eureka	..	2	6	..	..	..
522 Malador	..	..	..	10	..	15
523 Daisy	..	..	2	2	..	2
524 Belle de Fontenay*	..	..	2	12	..	..
525 Brandale*	..	..	5	5	..	..
526 Early Rose*	..	..	15	10	..	20
527 Chave (Shaw)	..	..	2	8	..	..
528 Belle de Juillet†	5	..	12	15	..	..
529 Quarantaine de la Halle†	..	..	3	1	..	2
531 Ninety-fold*	5	..	10	10	..	..
532 Epicure*	5	..	..	10	..	..
533 Supreme†	3	..	10	8	..	10
534 Windsor Castle†	..	..	..	2	..	10
535 Discovery	..	5	..	10	..	12
536 Sir John Llewellyn*	5	..	..	15	..	..
537 King Edward VII	2	6	..	..	..	10
538 Cramond Blossom	..	..	2	2	..	..
539 Chas. Fidler	..	..	..	3	..	..
540 Factor	..	..	10	8	..	..
541 Duke of York	5	..	..	..	..	..
542 Langworthy	..	..	..	3	..	..
543 Tyne Kidney	..	..	..	3	..	..
544 Table Talk	..	..	1	2	..	..
545 Dalmeny Kidney	..	..	..	3	..	..
546 Crofter	..	..	..	2	..	..
547 Scottish Queen	..	..	1	2	..	..
548 Premier	..	..	1	..	..	..
549 Northern Star	2	3	..	..	..	..
550 Pink Blossom	..	..	..	10	..	..
551 Peace Maker	..	..	2	6	..	..
552 Dalmeny Red	..	..	..	2	..	..
553 Dalmeny Early*	..	..	..	..	..	..
554 Sharp's Express	..	..	..	..	1	..
555 Midlothian Early*	10	..	..	..	..	..
556 Southern Queen*	..	..	..	..	1	..
557 Webber's Early*	2	5	5	12	..	..
558 White Blossom	..	..	2	2	..	..
559 Red Kidney	..	15	..	..	..	..
560 Money Maker	..	10	..	20	..	..
561 Sir Thos. Lipton	..	15	..	..	..	..
562 Radium†	..	..	..	20	..	..
563 Acme†	5	..	..	40	..	..
564 Heather Blossom†	..	..	10	10	..	..

[1]Nos. 500-518 of German origin; 519-523 from Holland; 524-529 from France; 530-598 from Great Britain; 599-653 from America.

TABLE I. PERCENT OF LEAF INFECTION WITH EARLY BLIGHT AND TIP BURN, SANDY LOAM SOIL, 1905—*Continued*

FIELD NUMBER AND NAME		AUG. 15		AUG. 21		AUG. 30	
		Early blight	Tip burn	Early blight	Tip burn	Early blight	Tip burn
565	Discovery	..	15	..	15	..	..
566	Supreme†	..	..	..	12	..	..
567	Ideal	5	10	..	..	..	..
568	Flour Ball	10	..	10	..	..	..
569	Ninety-fold*	..	..	..	40	..	..
570	Evergood	2	3	..	17	..	22
572	Up-to-Date	..	5	..	8	..	..
573	Northern Star	..	..	..	10	..	..
574	British Queen	..	..	..	10	..	..
575	Fidler's Seedling	..	..	..	10	..	..
576	Chas. Fidler	5	..	..	11	..	20
577	Snowball	..	..	..	17	..	..
578	Monarch*	..	5	..	3	..	15
579	Dumfries' Model	..	5	..	..	..	7
580	Duchess of Cornwall*	..	5	2	2	..	..
581	Factor	..	..	..	..	..	..
582	Improved Kidney	..	..	..	20	..	..
583	King Edward VII	5	5	..	20	..	..
584	Sir John Llewellyn*	..	15	..	15	..	..
585	Cramond Blossom	..	5	..	10	..	20
586	Langworthy	10	5	..	12	..	20
587	Duke of Rothesay	5	10	..	20	..	..
588	Royal Kidney	..	..	..	3	..	..
589	Duke of York*	..	5	10	10	..	..
590	Empress Queen	..	10	..	..	..	..
591	British Queen†	..	..	..	2	..	..
592	Royal Kidney	..	..	10	10	..	..
593	Empire Kidney	..	..	7	..	..	..
594	Evergood	..	..	10	..	..	..
595	Goodfellow	..	..	2	2	..	..
596	Up-to-Date†	..	..	..	..	..	..
597	Northern Star	..	..	2	..	..	..
598	Eldorado	..	..	..	10	..	15
599	American Wonder	5	10	10	10	12	10
600	Boss	2	2	8	4	10	6
601	Buffalo	2	3	4	4	5	10
602	Cambridge Russett	..	..	2	1	5	5
603	Clarke's Pride	2	3	9	8	12	12
604	Crine's Lightning	2	5	3	7	10	10
605	Dakota Red	..	..	1	5	2	10
606	Delaware	..	3	..	4	2	10
607	Doe's Pride	..	..	2	3	10	10
608	Enormous	..	..	..	2	2	..
609	Gem of Aroostook	..	..	2	4	5	15
610	Blight Proof	..	..	2	1	2	6
611	Green Mountain	..	..	2	2	2	12
612	Harris Snowball	..	..	..	1	7	3
613	Holborn Abundance	..	..	2	2	..	7
614	Ionia Seedling	..	..	2	3	2	6
615	Irish Cobbler†	..	15	10	20	..	..
616	Keeper	..	..	3	7	3	10
617	Late Blightless	5	3	5	5	..	5
618	Norcross	5	5	10	6	..	10
619	Million Dollar	..	..	3	4	3	5
620	Norcross	5	5	6	5	6	10
621	Orange Blossom	..	..	2	2	..	..
622	Quick Lunch	5	15	10	12	..	..
623	Rural New Yorker No. 2	..	15	7	25	..	25
624	Scab Proof	..	..	..	3	..	3
625	Sir W. Raleigh	..	10	2	12	4	15
626	Star of the East	..	8	..	..	..	..
627	State of Maine	..	..	..	8	2	..
628	Swiss Snowflake	..	..	..	8	..	10
629	Vermont Gold Coin	..	10	..	12	..	17

TABLE I. PERCENT OF LEAF INFECTION WITH EARLY BLIGHT AND TIB BURN, SANDY LOAM SOIL, 1905—*Concluded*

FIELD NUMBER AND NAME		AUG. 15		AUG. 21		AUG. 30	
		Early blight	Tip burn	Early blight	Tip burn	Early blight	Tip burn
630	Westfield	..	..	..	2	..	3
631	White Beauty	..	..	..	4	..	10
632	White Scotch King	..	10	..	10	2	10
633	Unnamed Pink	..	..	..	2	..	5
634	Babbitt	..	5	..	5	2	..
635	Unknown variety	..	3	..	10	7	..
636	*S. commersonii*	..	..	..	..	..	..
637	Alexander's No. 1 Red	..	..	..	2	..	2
638	Washington	5	5	..	8	..	12
639	Orlando	2	..	..	2	..	..
640	Alexander's No. 10	..	..	..	5	5	..
641	Gem	5	15	..	..	..	17
642	Pasadena	5	10	..	10	..	20
643	Alexander's No. 50	5	5	5	5	..	10
644	Alexander's No. 100	..	5	5	2	..	8
645	Havana	..	10	5	10	5	15
646	Maule's Reliance	..	..	..	2	1	5
647	Sunset	..	5	7	10	..	12
648	Alexander's No. 4	..	10	..	12	1	15
649	Alexander's No. 7	5	5	..	7	9	9
650	Alexander's Seedling	..	10	3	10	10	..
651	Alexander's Seedling	..	..	2	2	..	..
652	Prof. Maerker	..	..	..	1	..	2
653	Rural Blush	..	..	..	1	..	..

TABLE II. WEATHER RECORD—Aug. 15-Oct. 2, 1905

		Rainfall	Temp. ° F. Max.	Temp. ° F. Min.	Weather
Aug.	15	0.5	66	58	C
	16	0.8	64	55	PC
	17	...	67	50	F
	18	...	73	53	F
	19	...	68	58	F
	20	...	66	54	PC
	21	...	77	57	F
	22	...	80	66	F
	23	...	74	62	F
	24	...	72	60	PC
	25	...	69	57	F
	26	...	69	51	F
	27	...	66	54	PC
	28	...	69	49	PC
	29	0.3	71	56	PC
	30	0.5	68	62	C
	31	1.2	66	55	C
Sept.	1	...	67	54	PC
	2	...	70	53	C
	3	0.85	70	56	C
	4	0.35	72	62	C
	5	0.10	69	59	PC
	6	0.70	66	58	C
	7	trace	66	55	PC
	8	...	69	50	F
	9	...	73	54	F
	10	...	74	58	F
	11	...	72	61	PC
	12	0.06	70	60	C
	13	0.03	65	51	C
	14	...	57	43	F
	15	trace	58	45	C
	16	0.21	66	54	PC
	17	...	69	61	PC
	18	1.47	70	62	C
	19	...	77	63	F
	20	0.5	71	65	C
	21	...	71	57	F
	22	0.02	80	58	PC
	23	...	68	54	PC
	24	0.03	60	50	PC
	25	trace	57	47	C
	26	...	51	41	PC
	27	...	53	43	C
	28	...	68	48	F
	29	...	69	49	F
	30	...	72	55	F
Oct.	1	...	71	54	F
	2	...	76	58	PC

F, fair; PC, partly cloudy; C, cloudy.

TABLE III. PERCENTAGE OF VINES GREEN ON VARIOUS DATES IN SEPTEMBER AND EARLY OCTOBER, 1905, SANDY LOAM SOIL

FIELD NUMBER AND NAME	DATE—	8	11	14	16	19	23	25	28	2	4
500	Geheimrat Theil	80	75	75	75	72	60	60	59	30	10
501	Sophie	85	85	80	80	80	80	78	78	78	70
502	Dabersche	25	10	5	5	3	..	..	..	..	..
503	Richter's Imperator	75	60	60	55	40	3	3	2	..	..
504	Magnum Bonum	40	20	10	10	8	..	..	..	..	..
505	Irene	90	85	85	85	85	80	80	80	70	15
506	Prof. Maerker	85	70	70	65	50	10	10	9	1	1
507	Silesia	85	75	70	70	65	20	20	15	..	..
508	Max Eyth	75	75	75	75	75	75	70	70	50	15
509	Mohort	70	60	60	60	60	25	17	15	8	..
510	Gastold	85	65	65	65	52	15	12	10	5	1
511	Pres. Krueger	85	75	75	75	70	40	40	20	5	2
512	Prof. Wohltmann	95	90	90	90	90	85	85	83	70	30
513	Topaz†	50	30	15	10	5	..	..	..	..	..
514	Boncza	60	50	50	50	50	15	15	15	10	3
515	Leo	85	70	70	70	70	10	10	10	..	..
516	Fuerst Bismark	80	75	75	75	75	40	40	38	15	5
517	Apollo	90	85	85	85	85	85	84	82	75	75
518	Gelbfleischige Sp. Kartoffel	60	40	30	25	25	3	3	2	..	..
519	Elgenheimer*	75	60	60	60	55	10	8	8	..	..
520	Landskroon†	60	55	43	40	30	3	3	2	2	..
521	Eureka	85	70	70	70	70	50	50	46	10	..
522	Malador	80	65	60	60	55	15	2	2	..	..
523	Daisy	90	85	85	85	85	85	82	80	46	1
524	Belle de Fontenay*	ripe									
525	Brandale*	ripe									
526	Early Rose*	10	3	..	..	..	..	..	..	..	..
527	Chave (Shaw)	0									
528	Belle de Juillet†	0									
529	Quarantaine de la Halle†	20	10	8	5	3	..	..	..	..	..
531	Ninety-fold*	0									
532	Epicure*	0									
533	Supreme†	5	3	2	..	..	..	..	..	..	..
534	Windsor Castle†	20	10	5	..	..	..	..	..	..	..
535	Discovery	70	70	70	70	70	25	25	22	5	..
536	Sir John Llewellyn*	0									
537	King Edward VII	50	15	10	5	0					
538	Cramond Blossom	70	40	35	25	10	0				
539	Chas. Fidler	90	75	75	75	72	0				
540	Factor	85	80	75	75	18	0				
541	Duke of York	0									
542	Langworthy	70	60	60	50	15	0				
543	Tyne Kidney	85	80	75	70	18	0				
544	Table Talk	85	80	75	70	18	0				
545	Dalmeny Kidney	85	80	75	70	18	0				
546	Crofter	70	60	58	58	10	0				
547	Scottish Queen	60	50	50	40	10	0				
548	Premier	85	80	80	75	35	0				
549	Northern Star	80	80	80	80	40	0				
550	Pink Blossom	80	70	65	65	50	0				
551	Peace Maker	70	60	60	55	50	0				
552	Dalmeny Red	70	50	45	40	35	0				
553	Dalmeny Early*	0									
554	Sharp's Express	0									
555	Midlothian Early*	0									
556	Southern Queen*	0									
557	Webber's Early*	20	10	5	5	3	0				
558	White Blossom	40	30	22	20	15	0				
559	Red Kidney	0									
560	Money Maker	25	10	10	10	5	0				
561	Sir Thos. Lipton	20	10	8	8	4	0				
562	Radium†	50	30	15	10	5	0				
563	Acme†	0									
564	Heather Blossom†	50	40	30	25	15	0				
565	Discovery	50	40	40	40	40	0				
566	Supreme†	15	3	2	0						

0—Dead.

TABLE III. PERCENTAGE OF VINES GREEN ON VARIOUS DATES IN SEPTEMBER AND EARLY OCTOBER, 1905, SANDY LOAM SOIL—*Cont'd.*

	FIELD NUMBER AND NAME	DATE—	8	11	14	16	19	23	25	28	2	4
567	Iueal		0									
568	Flour Ball		0									
569	Ninety-fold*		0									
570	Evergood		40	30	20	20	15	0				
572	Up-to-Date		50	30	20	20	10	0				
573	Northern Star		70	40	35	35	25	0				
574	British Queen		5	2	1	..	..	..	..	..	..	..
575	Fidler's Seedling		0									
576	Chas. Fidler		20	10	6	6	3	0				
577	Snowball		0									
578	Monarch*		40	25	18	18	10	0				
579	Dumfries' Model		30	15	12	12	8	0				
580	Duchess of Cornwall*		50	40	30	25	10	0				
581	Factor		80	65	60	55	15	0				
582	Improved Kidney		3	3	2	2	2	0				
583	King Edward VII		2	2	2	..	..	..	..	..	..	..
584	Sir John Llewellyn*		0									
585	Cramond Blossom		10	3	1	..	..	..	..	..	..	..
586	Langworthy		20	15	10	10	10	..	..	..	..	..
587	Duke of Rothesay		0									
588	Royal Kidney		10	7	5	5	5	..	..	..	..	..
589	Duke of York*		0									
590	Empress Queen		0									
591	British Queen†		0									
592	Royal Kidney		30	25	15	10	5	..	..	..	..	..
593	Empire Kidney		40	25	15	10	8	..	..	..	..	..
594	Evergood		70	60	25	22	10	..	..	..	..	..
595	Goodfellow		60	50	25	25	10	..	..	..	..	..
596	Up-to-Date†		80	65	35	35	15	..	..	..	..	..
597	Northern Star		90	85	75	75	20	..	..	..	..	..
598	Eldorado		85	80	75	75	40	..	..	..	..	..
599	American Wonder		15	5	4	4	2	..	..	..	..	..
600	Boss		3	2	2	2	1	..	..	..	..	..
601	Buffalo		60	30	10	8	8	..	..	..	..	..
602	Cambridge Russett		50	30	10	10	8	..	..	..	..	..
603	Clarke's Pride		40	10	5	3	2	..	..	..	..	..
604	Crine's Lightning		0									
605	Dakota Red		10	5	..	..	..	..	..	..	..	..
606	Delaware		50	15	5	5	3	..	..	..	..	..
607	Doe's Pride		50	25	5	5	3	..	..	..	..	..
608	Enormous		50	25	5	3	3	..	..	..	..	..
609	Gem of Aroostook		40	5	2	..	..	..	..	..	..	..
610	Blight Proof		5	..	..	..	..	..	..	..	..	..
611	Green Mountain		80	65	60	55	12	..	..	..	..	..
612	Harris Snowball		50	15	5	5	5	..	..	..	..	..
613	Holborn Abundance		60	30	15	15	10	..	..	..	..	..
614	Ionia Seedling		60	50	25	25	12	..	..	..	..	..
615	Irish Cobbler		50	20	10	8	8	..	..	..	..	..
616	Keeper		0									
617	Late Blightless		40	20	12	12	9	..	..	..	..	..
618	Norcross		90	85	85	82	75	..	..	..	..	..
619	Million Dollar		50	20	10	10	10	..	..	..	..	..
620	Norcross		40	10	5	5	..	..	..	..	..	..
621	Orange Blossom		40	20	10	8	5	..	..	..	..	..
622	Quick Lunch		90	85	80	75	20	..	..	..	..	..
623	Rural New Yorker No. 2		5	5	5	5	2	..	..	..	..	..
624	Scab Proof		7	..	..	..	..	..	..	..	..	..
625	Sir W. Raleigh		20	5	5	5	..	..	..	..	..	..
626	Star of the East		40	10	5	5	3	..	..	..	..	..
627	State of Maine		60	25	10	8	5	..	..	..	..	..
628	Swiss Snowflake		60	25	10	8	5	..	..	..	..	..
629	Vermont Gold Coin		75	60	45	40	20	..	..	..	..	..
630	Westfield		30	5	5	3	3	..	..	..	..	..
631	White Beauty		50	8	5	3	2	..	..	..	..	..
632	White Scotch King		20	2	2	2	2	..	..	..	..	..
633	Unnamed Pink		30	10	5	3	3	..	..	..	..	..
			85	70	60	50	22	3	2	1	..	..

0—Dead.

NOTE.—The dotted lines . . . . . in Tables III, IV and V indicate death of vines from the point of beginning of the line.

TABLE III. PERCENTAGE OF VINES GREEN ON VARIOUS DATES IN SEPTEMBER AND EARLY OCTOBER, 1905, SANDY LOAM SOIL—*Concl'd.*

	FIELD NUMBER AND NAME	DATE—	8	11	14	16	19	23	25	28	2	4
634	Babbitt		25	10	8	5	..	..	..	..	..	..
635	Unknown variety		60	20	15	10	8	..	..	..	..	..
636	*S. commersonii*		70	40	30	25	20	..	..	..	..	..
637	Alexander's No. 1 Red		95	90	90	90	85	75	55	50	..	..
638	Washington		20	10	8	5	3	..	..	..	..	..
639	Orlando		50	30	10	5	5	..	..	..	..	..
640	Alexander's No. 10		25	5	3	3	2	..	..	..	..	..
641	Gem		40	5	5	5	4	..	..	..	..	..
642	Pasadena		10	..	..	..	..	..	..	..	..	..
643	Alexander's No. 50		5	3	..	..	..	..	..	..	..	..
644	Alexander's No. 100		10	5	3	3	2	..	..	..	..	..
645	Havana		50	20	15	10	7	..	..	..	..	..
646	Maule's Reliance		60	30	15	10	7	..	..	..	..	..
647	Sunset		20	5	5	3	2	..	..	..	..	..
648	Alexander's No. 4		20	5	5	3	1	..	..	..	..	..
649	Alexander's No. 7		25	5	3	3	..	..	..	..	..	..
650	Alexander's Seedling		25	10	5	3	..	..	..	..	..	..
651	Alexander's Seedling		10	3	..	..	..	..	..	..	..	..
652	Prof. Maerker		80	70	70	70	7	5	4	3	..	..
653	Rural Blush		90	85	85	85	80	10	10	5	..	..

TABLE IV. PERCENTAGE OF VINES GREEN ON VARIOUS DATES IN SEPTEMBER AND EARLY OCTOBER, 1905, CLAY LOAM SOIL

	FIELD NUMBER AND NAME	DATE—	8	11	14	16	19	23	25	28	2	4
500	Geheimrat Theil		..	80	80	73	73	15	12	8	0	
501	Sophie		..	85	85	80	80	70	65	55	25	0
502	Dabersche		..	50	50	45	15	0				
503	Richter's Imperator		..	90	80	75	60	15	10	10	1	0
504	Magnum Bonum		..	60	60	55	10	0				
505	Irene		0									
506	Prof. Maerker		..	85	66	65	50	10	9	5	0	
507	Silesia		..	85	85	85	82	70	68	65	28	5
508	Max Eyth		..	80	80	80	75	40	38	35	10	1
509	Mohort		..	85	85	80	80	40	38	25	12	1
510	Gastold		..	80	79	75	75	20	15	12	3	1
511	Pres. Krueger		..	85	83	80	80	65	62	60	15	1
512	Prof. Wohltmann		..	85	85	80	80	80	80	80	40	1
513	Topaz†		..	70	70	68	60	3	2	0		
514	Boncza		..	70	..	70	68	60	5	5	5	0
515	Leo		..	80	..	80	80	0				
516	Fuerst Bismark		..	85	85	82	80	60	60	60	15	1
517	Apollo		..	85	85	82	82	80	80	78	65	8
518	Gelbfleischige Sp. Kartoffel		..	75	75	70	65	5	5	3	0	
519	Eigenheimer*		..	50	50	50	50	20	16	12	3	0
520	Landskroon†		..	50	50	50	48	3	2	1	0	
521	Eureka		..	85	85	78	75	15	15	12	0	
522	Malador		..	70	70	70	70	10	10	10	1	0
523	Daisy		..	90	84	84	80	70	68	60	10	2
524	Belle de Fontenay*		0									
525	Brandale*		0									
526	Early Rose*		..	15	15	10	7	0				
527	Chave (Shaw)		..	5	5	3	2	0				
528	Belle de Juillet†		0									
529	Quarantaine de la Halle†		..	30	20	15	10	0				
531	Ninety-fold*		..	3	3	0						
532	Epicure*		..	5	3	2	1	0				
533	Supreme†		..	5	3	2	0					
534	Windsor Castle†		..	10	4	4	2	0				

0—Dead.

TABLE IV. PERCENTAGE OF VINES GREEN ON VARIOUS DATES IN SEPTEMBER AND EARLY OCTOBER, 1905, CLAY LOAM SOIL—*Cont'd.*

FIELD NUMBER AND NAME	DATE—	8	11	14	16	19	23	25	28	2	4
535 Discovery			50	50	40	35	0				
536 Sir John Llewellyn*			5	5	5	3	0				
537 King Edward VII			50	40	20	10	0				
538 Cramond Blossom			70	40	40	10	0				
539 Chas. Fidler		0									
540 Factor			85	70	65	12	0				
541 Duke of York		0									
542 Langworthy			80	75	72	12	0				
543 Tyne Kidney			85	75	73	15	0				
544 Table Talk			85	78	75	15	0				
549 Northern Star			80	75	73	16	0				
550 Pink Blossom			85	78	75	12	0				
551 Peace Maker			80	80	75	12	0				
591 British Queen†			60	30	28	10	0				
592 Royal Kidney			50	15	12	9	0				
593 Empire Kidney			80	75	75	12	0				
594 Evergood			80	75	75	15	0				
595 Goodfellow			85	80	78	22	0				
596 Up-to-Date†			80	80	75	12	0				
598 Eldorado			75	75	70	25	0				
599 American Wonder			10	0							
600 Boss			20	15	15	8	0				
601 Buffalo			40	28	28	10	0				
602 Cambridge Russett			25	25	20	10	0				
603 Clarke's Pride		0									
604 Crine's Lightning			30	30	25	10	0				
605 Dakota Red			45	35	35	10	0				
606 Delaware			50	32	32	10	0				
607 Doe's Pride			50	30	30	10	0				
608 Enormous			40	20	20	15	0				
609 Gem of Aroostook			25	10	10	8	0				
610 Blight Proof			80	75	75	40	2	2	2	..	..
611 Green Mountain			60	30	25	18	0				
612 Harris Snowball			60	50	50	12	0				
613 Holborn Abundance			85	75	75	65	10	10	8	0	
614 Ionia Seedling			40	10	10	8	0				
615 Irish Cobbler†		0									
616 Keeper			75	75	75	45	0				
617 Late Blightless			80	80	80	55	2	2	2	0	
618 Norcross			60	40	35	12	0				
619 Million Dollar			20	0							
620 Norcross			50	10	10	8	0				
621 Orange Blossom			85	70	65	10	0				
623 Rural New Yorker No. 2			10	0							
624 Scab Proof			15	5	3	2	0				
625 Sir W. Raleigh			30	30	25	10	0				
627 State of Maine			15	8	8	5	0				
628 Swiss Snowflake			70	70	70	25	0				
629 Vermont Gold Coin			50	50	30	10	0				
630 Westfield			30	30	25	10	0				
631 White Beauty			30	15	15	10	0				
632 White Scotch King			25	10	10	8	0				
633 Unnamed Pink			70	55	55	13	0				
635 Unknown variety			60	50	40	10	0				
652 Prof. Maerker			80	80	75	25	0				
653 Rural Blush			65	50	40	10	0				
654 June			60	45	45	12	0				
1 Dakota Red			..	..	45	45	0				
9 Rust Proof			..	..	75	75	65	60	50	5	0

TABLE V. PERCENTAGE OF FOLIAGE AFFECTED BY LATE BLIGHT, AUGUST 15—SEPTEMBER 25, 1905, SANDY LOAM SOIL

FIELD NUMBER AND NAME	DATE—	15	21	29	30	3	5	6	11	16	19	25
500	Geheimrat Theil	..	..	..	..	..	..	..	10	10	15	15
501	Sophie	..	..	..	..	..	..	..	8	8	10	20
502	Dabersche	..	..	..	10	10	10	10	12	40	80	..
503	Richter's Imperator	..	..	..	..	..	..	..	10	12	40	..
504	Magnum Bonum	..	..	..	..	..	1	1	10	30	70	..
505	Irene	..	..	..	..	..	..	..	2	2	3	5
506	Prof. Maerker	..	..	..	..	..	1	1	15	20	45	65
507	Silesia	..	..	..	..	..	..	..	5	10	15	65
508	Max Eyth	..	..	..	..	..	..	..	2	5	10	20
509	Mohort	..	..	..	..	..	..	..	10	15	25	65
510	Gastold	..	..	..	..	..	..	..	12	12	25	65
511	Pres. Kruger	..	..	..	..	..	..	..	10	10	15	50
512	Prof. Wohltmann	..	..	..	..	..	..	..	3	5	5	10
513	Topaz†	..	..	..	..	..	..	..	7	10	15	..
514	Boncza	..	..	..	..	..	2	2	15	17	18	45
515	Leo	..	..	..	..	..	..	..	2	5	25	85
516	Fuerst Bismark	..	..	..	..	..	..	..	1	5	15	50
517	Apollo	..	..	..	..	..	..	..	2	2	3	5
518	Gelbfleischige Sp. Kartoffel	..	..	..	..	..	..	..	5	10	15	30
519	Eigenheimer*	..	..	..	..	..	..	..	1	3	6	38
520	Landskroon†	..	..	..	..	..	..	2	10	25	70	..
521	Eureka	..	..	..	..	..	..	..	..	3	18	25
522	Malador	..	..	..	..	..	..	..	1	5	30	60
523	Daisy	..	..	..	..	..	..	..	..	3	8	10
524	Belle de Fontenay*	..	..	..	..	..	..	..	..	..	..	..
525	Brandale*	..	..	..	1	..	..	..	..	..	..	..
526	Early Rose*	..	..	..	1	..	..	17	..	..	..	..
527	Chave (Shaw)	..	..	..	..	..	..	..	..	..	..	..
528	Belle de Juillet†	..	..	..	..	..	..	..	..	..	..	..
529	Quarantaine de la Halle†	..	5	5	10	10	10	30	60	70	75	..
531	Ninety-fold*	..	..	..	..	..	..	..	..	..	..	..
532	Epicure*	..	..	..	..	..	..	..	..	..	..	..
533	Supreme†	..	..	..	3	3	3	3	18	..	..	..
534	Windsor Castle†	..	..	..	6	6	6	10	55	78	..	..
535	Discovery	..	..	..	..	..	..	..	..	2	5	60
536	Sir John Llewellyn*	..	..	..	..	..	..	..	..	..	..	..
537	King Edward VII	..	..	..	5	5	5	7	20	40	55	..
538	Cramond Blossom	..	..	..	1	1	1	3	20	35	75	..
539	Chas. Fidler	..	..	..	1	1	1	1	12	15	35	..
540	Factor	..	..	..	2	2	2	8	20	30	85	..
541	Duke of York	..	..	..	..	..	..	..	..	..	..	..
542	Langworthy	..	..	..	2	2	2	2	21	38	80	..
543	Tyne Kidney	..	..	..	2	2	2	2	20	25	82	..
544	Table Talk	..	..	..	1	1	1	1	20	23	80	..
545	Dalmeny Kidney	..	..	..	1	1	1	1	15	22	50	..
546	Crofter	..	..	..	5	5	5	7	20	30	75	..
547	Scottish Queen	..	..	..	2	2	2	6	20	30	75	..
548	Premier	..	..	..	..	..	..	..	15	20	30	..
549	Northern Star	..	..	..	1	1	1	1	5	10	40	..
550	Pink Blossom	..	..	..	2	2	5	5	15	20	60	..
551	Peace Maker	..	..	..	1	1	3	3	15	20	40	..
552	Dalmeny Red	..	..	..	..	..	..	..	10	12	25	..
553	Dalmeny Early*	..	..	..	..	..	..	..	..	..	..	..
554	Sharp's Express	..	..	..	..	..	..	..	..	..	..	..
555	Midlothian Early*	..	..	..	..	..	..	..	..	..	..	..
556	Southern Queen*	..	..	..	..	1	1	1	10	..	..	..
557	Webber's Early*	..	..	..	..	..	1	..	10	20	30	..
558	White Blossom	..	..	..	1	1	8	8	18	18	40	..
559	Red Kidney	..	..	..	..	..	..	..	..	..	..	..
560	Money Maker	..	..	..	..	..	1	1	10	20	30	..
561	Sir Thos. Lipton	..	..	..	1	1	6	6	20	50	85	..
562	Radium†	..	..	..	..	..	..	..	10	..	..	..
563	Acme†	..	..	..	..	..	10	10	20	..	..	..
564	Heather Blossom†	..	..	..	1	1	2	2	20	30	80	..
565	Discovery	..	..	..	..	..	..	..	5	10	..	..
566	Supreme†	..	..	..	..	..	1	..	..	..	..	..

TABLE V. PERCENTAGE OF FOLIAGE AFFECTED BY LATE BLIGHT, AUGUST 15—SEPTEMBER 25, 1905, SANDY LOAM SOIL—*Continued*

FIELD NUMBER AND NAME	DATE— 15	21	29	30	3	5	6	11	16	19	25
567 Ideal	..	..	..	..	..	..	..	..	..	..	..
568 Flour Ball	..	..	..	..	..	1	1	5	..	..	..
569 Ninety-fold*	..	..	..	1	..	..	..	..	..	..	..
570 Evergood	..	..	..	..	..	1	1	10	15	50	..
572 Up-to-Date	..	..	..	1	1	35	35	36	45	85	..
573 Northern Star	..	..	..	1	1	12	12	12	25	50	..
574 British Queen	..	..	..	1	1	20	20	50	..	..	..
575 Fidler's Seedling	..	..	..	..	..	..	..	..	..	..	..
576 Chas. Fidler	..	..	..	..	..	..	..	10	30	40	..
577 Snowball	..	..	..	1	1	40	..	..	..	..	..
578 Monarch*	..	..	..	..	..	10	10	20	70	80	..
579 Dumfries' Model	..	..	..	..	..	35	35	37	80	85	..
580 Duchess of Cornwall*	..	..	..	1	1	20	20	25	65	95	..
581 Factor	..	..	..	1	17	17	17	20	60	92	..
582 Improved Kidney	..	..	..	..	..	12	12	20	60	70	..
583 King Edward VII	..	..	..	..	..	10	..	..	..	..	..
584 Sir John Llewellyn*	..	..	..	..	..	..	..	..	..	..	..
585 Cramond Blossom	..	..	..	..	..	10	10	20	40	45	..
586 Langworthy	..	..	..	..	..	1	1	10	25	80	..
587 Duke of Rothesay	..	..	..	..	..	..	..	..	..	..	..
588 Royal Kidney	..	..	..	..	..	12	12	25	50	..	..
589 Duke of York*	..	..	..	..	..	..	..	..	..	..	..
590 Empress Queen	..	..	..	..	..	..	..	..	..	..	..
591 British Queen†	..	..	..	1	1	20	20	32	80	95	..
592 Royal Kidney	..	..	..	1	1	15	15	40	85	95	..
593 Empire Kidney	..	..	..	1	1	10	10	20	80	90	..
594 Evergood	..	..	..	1	1	1	1	17	30	75	..
595 Goodfellow	..	..	..	1	1	4	4	15	40	90	..
596 Up-to-Date†	..	..	..	1	1	3	3	17	40	90	..
597 Northern Star	..	..	..	1	1	2	2	18	25	75	..
598 Eldorado	..	..	..	..	..	..	..	5	5	..	..
599 American Wonder	..	..	..	1	..	..	..	..	..	..	..
600 Boss	..	..	3	3	3	15	15	20	30	..	..
601 Buffalo	..	..	..	..	..	15	15	18	40	..	..
602 Cambridge Russett	..	3	12	12	12	20	20	30	35	..	..
603 Clarke's Pride	..	..	..	..	..	..	..	..	..	..	..
604 Crine's Lightning	..	..	..	..	..	12	12	22	30	..	..
605 Dakota Red	..	..	1	1	1	10	10	20	50	..	..
606 Delaware	2	3	5	5	5	10	10	15	25	..	..
607 Doe's Pride	..	..	1	1	1	8	8	12	20	..	..
608 Enormous	..	2	8	8	8	15	15	40	60	..	..
609 Gem of Aroostook	..	..	1	1	1	17	17	25	..	..	..
610 Blight Proof	..	..	..	..	..	7	7	17	25	65	..
611 Green Mountain	5	5	5	5	5	7	7	20	35	..	..
612 Harris Snowball	..	..	..	..	..	5	5	10	35	..	..
613 Holborn Abundance	..	..	..	..	..	2	2	7	15	..	..
614 Ionia Seedling	..	..	..	..	..	4	4	12	20	..	..
615 Irish Cobbler†	..	..	..	..	..	..	..	..	..	..	..
616 Keeper	..	..	..	..	..	2	2	15	20	..	..
617 Late Blightless	..	..	..	..	1	1	1	5	8	..	..
618 Norcross	..	..	10	10	22	22	22	30	70	..	..
619 Million Dollar	..	..	..	..	..	..	2	30	90	95	..
620 Norcross	..	..	..	..	..	..	..	12	40	60	..
621 Orange Blossom	..	..	..	1	1	1	1	10	20	75	..
622 Quick Lunch	..	..	1	1	1	1	1	1	1	1	..
623 Rural New Yorker No. 2	..	..	..	..	..	..	3	7	12	..	..
624 Scab Proof	..	..	..	..	..	..	1	15	25	35	..
625 Sir W. Raleigh	..	..	..	3	3	3	3	20	60	85	..
626 Star of the East	..	..	..	1	1	1	8	30	70	90	..
627 State of Maine	..	..	..	1	1	1	3	20	70	90	..
628 Swiss Snowflake	..	..	..	..	..	..	..	10	15	80	..
629 Vermont Gold Coin	..	..	..	1	1	1	1	20	40	75	..
630 Westfield	..	..	..	5	5	5	5	25	75	90	..
631 White Beauty	..	..	..	1	1	1	10	35	50	75	..
632 White Scotch King	..	..	..	..	..	..	8	20	75	90	..
633 Unnamed Pink	..	..	..	..	..	..	10	18	40	80	..

TABLE V. PERCENTAGE OF FOLIAGE AFFECTED BY TE BLIGHT, AUGUST 15—SEPTEMBER 25, 1905, SANDY LOAM SOIL—*Concluded*

FIELD NUMBER AND NAME	DATE—	15	21	29	30	3	5	6	11	16	19	25
634	Babbitt	..	..	..	1	1	1	2	25	85	95	..
635	Unknown variety	..	..	..	1	1	1	6	30	90	93	..
636	*S. commersonii*	..	..	..	..	2	2	6	20	50	85	..
637	Alexander's No. 1 Red	..	..	..	..	..	..	1	5	8	18	25
638	Washington	..	..	..	1	1	1	7	40	55	60	..
639	Orlando	..	..	..	1	1	1	3	32	85	90	..
640	Alexander's No. 10	2	2	2	2	2	2	10	60	92	95	..
641	Gem	..	..	..	1	1	1	1	18	32	35	..
642	Pasadena	..	..	..	..	..	17	17	80	..	..	..
643	Alexander's No. 50	..	..	..	..	50	50	50	55	95	..	..
644	Alexander's No. 100	2	2	2	2	2	20	20	60	95	..	..
645	Havana	..	..	..	..	..	..	..	30	90	..	..
646	Maule's Reliance	..	..	..	..	..	..	3	40	88	..	..
647	Sunset	..	..	..	..	..	..	2	60	97	..	..
648	Alexander's No. 4	1	1	1	1	1	1	1	50	80	..	..
649	Alexander's No. 7	..	..	..	..	..	30	30	80	96	..	..
650	Alexander's Seedling	..	..	..	..	..	15	15	25	75	..	..
651	Alexander's Seedling	..	..	..	..	17	17	17	65	95	..	..
652	Prof. Maerker	..	..	..	..	..	..	..	7	17	25	..
653	Rural Blush	..	..	..	..	..	..	..	5	15	25	..

TABLE VI. PERCENTAGE OF TUBERS ROTTEN, SANDY LOAM SOIL, 1905

FIELD NUMBER AND NAME	No.1	No.2	Total	FIELD NUMBER AND NAME	No.1	No.2	Total
500 Geheimrat Theil,	0	0	3.2	542 Langworthy,	0	.4	.4
501 Sophie,	0	0	1.8	543 Tyne Kidney,	2.2	3.7	4.6
502 Dabersche,	0	.5	.8	544 Table Talk,	0	1.5	1.2
503 Richter's Imperator,	3.	4.	4.1	545 Dalmeny Kidney,	3.4	2.1	1.5
504 Magnum Bonum,	0	0	0	546 Crofter,	0	3.3	6.1
505 Irene,	0	0	.4	547 Scottish Queen,	0	16.2	17.3
506 Prof. Maerker,	2.5	0	3.3	548 Premier,	0	4.9	5.
507 Silesia,	0	.4	.6	549 Northern Star,	0	.9	1.4
508 Max Eyth,	0	0	1.5	550 Pink Blossom,	2.6	3.1	5.4
509 Mohort,	0	0	0	551 Peace Maker,	0	2.8	1.3
510 Gastold,	0	0	.4	552 Dalmeny Red,	0	5.	4.5
511 Pres. Krueger,	3.3	2.9	4.2	553 Dalmeny Early,*	0	0	0
512 Prof. Wohltmann,	0	0	.6	554 Sharp's Express,	0	0	0
513 Topaz,†	0	0	.2	555 Midlothian Early,*	0	0	2.8
514 Boncza,	0	2.5	1.8	556 Southern Queen,*	0	0	7.1
515 Leo,	0	0	0	557 Webber's Early,*	0	2.4	5.
516 Fuerst Bismark,	0	0	.4	558 White Blossom,	11.1	15.4	14.9
517 Apollo,	0	0	0	559 Red Kidney,	0	0	1.5
518 Gelbf. Sp. Kartoffel,	0	1.4	.9	560 Money Maker,	0	0	.8
519 Eigenheimer,*	0	0	.6	561 Sir Thos. Lipton,	0	6.3	5.1
520 Landskroon,†	0	.6	.2	562 Radium,†	0	0	4.3
521 Eureka,	0	0	.3	563 Acme, †	0	0	1.8
522 Malador,	1.7	.8	.7	564 Heather Blossom,†	8.7	8.5	11.6
523 Daisy,	0	0	0	565 Discovery,	0	0	5.2
524 Belle de Fontenay,*	0	0	2.6	566 Supreme,†	0	0	2.1
525 Brandale,*	0	14.3	17.9	567 Ideal,	0	2.5	4.4
526 Early Rose,*	27.2	17.1	18.5	568 Flour Ball,	11.	0	2.
527 Chave (Shaw),	22.2	11.1	11.9	569 Ninety-fold,*	33.3	0	8.6
528 Belle de Juillet,†	0	5.7	3.9	570 Evergood,	0	0	.3
529 Quar. de la Halle,†	0	12.4	13.2	572 Up-to-Date,	0	10.	7.3
531 Ninety-fold,*	0	5.	3.5	573 Northern Star,	0	9.1	8.6
532 Epicure,*	0	0	0	574 British Queen.	0	0	2.8
533 Supreme,†	0	0	0	575 Fidler's Seedling,	0	0	0
534 Windsor Castle†,	0	4.3	2.6	576 Chas. Fidler,	0	7.1	16.8
535 Discovery,	0	0	.8	577 Snowball,	0	0	14.1
536 Sir John Llewellyn,*	0	0	7.3	578 Monarch,*	0	3.8	6.
537 King Edward VII,	4.9	4.4	7.6	579 Dumfries' Model,	0	0	7.3
538 Cramond Blossom,	0	4.	4.9	580 Duchess of Cornwall,	0	7.7	5.
539 Chas. Fedler,	0	0	0	581 Factor,	7.1	3.5	7.
540 Factor.	25.2	14.6	17.1	582 Improved Kidney.	0	0	0
541 Duke of York,	9.7	2.2	4.6	583 King Edward VII,	0	0	5.8

NOTE.—No. 1, 85 grams (3 oz.) or more in weight; No. 2, 45-85 grams (1.5-3 oz.) in weight; total, Nos. 1 and 2 with culls weighing less than 45 grams.

TABLE VI—*Continued*

FIELD NUMBER AND NAME	No.1	No.2	Total	FIELD NUMBER AND NAME	No.1	No.2	Total
584 Sir John Llewellyn,*	0	0	0	619 Million Dollar,	14.2	15.3	16.2
585 Cramond Blossom,	0	35.2	20.8	620 Norcross,	14.8	19.2	17.1
586 Langworthy,	0	0	2.2	621 Orange Blossom,	10.6	14.6	14.5
587 Duke of Rothesay,	0	0	6.1	622 Quick Lunch,	10.5	5.3	8.2
588 Royal Kidney,	0	0	3.4	623 R. N. Y. No. 2,	10.5	1.	5.2
589 Duke of York,*	0	0	3.7	624 Scab Proof,	7.5	12.8	11.9
590 Empress Queen,	0	0	.9	625 Sir W. Raleigh,	19.	23.2	21.3
591 British Queen,†	0	0	4.7	626 Star of the East,	21.5	37.7	26.9
592 Royal Kidney,	0	3.4	1.9	627 State of Maine,	51.3	50.	49.5
593 Empire Kidney,	0	0	1.4	628 Swiss Snowflake,	5.7	4.5	4.6
594 Evergood,	0	0	0	629 Vermont Gold Coin,	26.1	2.	21.5
595 Goodfellow,	0	0	.7	630 Westfield,	14.2	17.2	16.8
596 Up-to-Date,†	3.9	10.1	5.7	631 White Beauty,	11.4	13.5	11.1
597 Northern Star,	0	0	1.2	632 White Scotch King,	60.	52.7	50.5
598 Eldorado,	0	0	.9	633 Unnamed Pink,	5.1	10.2	11.2
599 American Wonder,	0	1.6	2.1	634 Babbitt,	30.7	23.3	15.5
600 Boss,	30.7	22.5	22.8	635 Unknown variety,	28.6	28.5	27.8
601 Buffalo,	18.	9.8	15.8	636 *S. commersonii,*	0	0.	6.2
602 Cambridge Russett,	0	2.7	2.2	637 Alexander's No. 1 Red,	0	0	.5
603 Clarke's Pride,	12.5	3.3	48.3	638 Washington,	43.7	46.6	38.3
604 Crine's Lightning,	48.1	34.	34.8	639 Orlando,	66.6	50.	61.
605 Dakota Red,	3.2	5.1	3.8	640 Alexander's No. 10,	44.8	54.5	48.8
606 Delaware,	21.3	17.6	17.9	641 Gem,	50.	47.5	41.6
607 Doe's Pride,	6.7	3.4	4.1	642 Pasadena,	10.	33.3	31.5
608 Enormous,	19.4	22.3	22.6	643 Alexander's No. 50,	60.	8.7	12.5
609 Gem of Aroostook,	22.4	11.3	15.8	644 Alexander's No. 100,	32.4	26.9	28.7
610 Blight Proof,	15.1	11.9	14.8	645 Havana,	15.3	50.	25.3
611 Green Mountain,	18.1	25.	20.5	646 Maule's Reliance,	33.3	24.1	27.3
612 Harris Snowball,	7.9	4.7	8.7	647 Sunset,	51.5	25.	34.6
613 Holborn Abundance,	6.8	11.1	9.5	648 Alexander's No. 4,	47.3	33.3	41.3
614 Ionia Seedling,	35.1	35.	32.2	649 Alexander's No. 7,	40.9	11.1	24.1
615 Irish Cobbler,†	4.	2.2	2.5	650 Alexander's Seedling,	12.5	14.3	1.2
616 Keeper,	1.1	2.1	1.3	651 Alexander's Seedling,	21.5	15.	12.5
617 Late Blightless,	10.5	4.4	6.4	652 Prof. Maerker,	0	0	1.1
618 Norcross,	39.	21.	29.3	653 Rural Blush,	3.1	3.4	4.9

TABLE VII. PERCENTAGE OF TUBERS ROTTEN, CLAY LOAM SOIL, 1905

FIELD NUMBER AND NAME	No.1	No.2	Total	FIELD NUMBER AND NAME	No.1	No.2	Total
500 Geheimrat Theil,	15.6	21.7	17.3	528 Belle de Juillet,†	25.	59.4	41.3
501 Sophie,	7.9	8.	8.5	529 Quar. de la Halle,†	92.3	93.8	83.1
502 Dabersche,	54.5	51.8	48.8	531 Ninety-fold,*	82.3	50.	62.7
503 Richter's Imperator,	28.6	25.	28.2	532 Epicure,*	23.5	19.3	18.2
504 Magnum Bonum,	21.9	20.2	16.2	533 Supreme,†	0	28.6	27.7
505 Irene,	0	0	0	534 Windsor Castle,†	24.2	18.8	30.
506 Prof. Maerker,	6.6	8.1	7.6	535 Discovery,	0	0	18.
507 Silesia,	28.	12.3	9.5	536 Sir John Llewellyn,*	0	0	71.4
508 Max Eyth,	16.6	15.1	19.4	537 King Edward VII,	51.7	47.4	46.
509 Mohort,	3.1	0	3.2	538 Cramond Blossom,	58.9	63.	60.1
510 Gastold,	12.3	12.	8.1	540 Factor,	59.8	64.5	59.6
511 Pres. Krueger,	13.2	16.2	19.6	541 Duke of York,	75.5	77.7	77.9
512 Prof. Wohltmann,	0	0	3.	542 Langworthy,	10.8	12.6	18.9
513 Topaz,†	3.3	13.7	10.7	543 Tyne Kidney,	50.	51.1	51.1
514 Boncza,	19.6	9.8	10.2	544 Table Talk,	48.9	52.8	52.1
515 Leo,	0	0	18.1	549 Northern Star,	28.6	28.2	26.1
516 Fuerst Bismark,	1.9	3.3	3.3	550 Pink Blossom,	47.2	52.1	46.1
517 Apollo,	0	4.3	4.7	551 Peace Maker,	5.	0	4.4
518 Gelbf. Sp. Kartoffel,	36.8	22.9	26.9	591 British Queen,†	38.8	35.9	32.7
519 Eigenheimer,	25.7	21.4	20.9	592 Royal Kidney,	14.	12.2	11.6
520 Landskroon,†	0	12.2	10.6	593 Empire Kidney,	13.4	8.2	12.4
521 Eureka.	18.1	0	4.6	594 Evergood,	0	3.5	2.6
522 Malador,	10.4	6.2	8.8	595 Goodfellow,	1.2	0	2.2
523 Daisy,	15.9	4.7	8.9	596 Up-to-Date,†	38.	42.4	38.3
524 Belle de Fontenay,*	0	73.3	49.	598 Eldorado,	0	0	0
525 Brandale,*	100	0	81.	599 American Wonder,	57.9	42.5	41.5
526 Early Rose,*	86.2	98.1	88.5	600 Boss,	72.9	75.5	69.9
527 Chave (Shaw),	98.1	95.6	95.7	601 Buffalo,	70.9	79.4	72.2

NOTE.—No. 1, 85 grams (3 oz.) or more in weight; No. 2, 45-85 grams (1.5-3 oz.) in weight; total, Nos. 1 and 2 with culls weighing less than 45 grams.

TABLE VII—*Continued.*

FIELD NUMBER AND NAME	No.1	No.2	Total	FIELD NUMBER AND NAME	No.1	No.2	Total
602 Cambridge Russett,	62.9	57.7	59.2	620 Norcross,	78.9	62.8	72.7
603 Clarke's Pride,	73.5	64.9	68.9	621 Orange Blossom,	60.	61.8	54.9
604 Crine's Lightning,	78.8	58.8	72.7	623 R. N. Y. No. 2,	45.9	43.7	44.5
605 Dakota Red,	45.2	42.1	39.2	624 Scab Proof,	62.1	45.7	54.4
606 Delaware,	89.3	61.3	72.6	625 Sir W. Raleigh,	72.2	63.2	61.7
607 Doe's Pride,	30.	37.5	31.9	627 State of Maine,	42.1	36.8	32.7
608 Enormous,	72.4	68.7	67.2	628 Swiss Snowflake,	44.1	46.1	43.1
609 Gem of Aroostook,	82.8	74.5	76.6	629 Vermont Gold Coin,	81.8	74.5	73.5
610 Blight Proof,	52.9	32.5	45.3	630 Westfield,	51.5	39.7	48.1
611 Green Mountain,	91.4	7.3	74.9	631 White Beauty,	64.	48.8	62.3
612 Harris Snowball,	78.5	76.2	73.2	632 White Scotch King,	90.9	76.3	79.9
613 Holborn Abundance,	34.2	38.8	37.3	633 Unnamed Pink,	44.8	45.6	44.9
614 Ionia Seedling,	86.5	83.5	84.8	635 Unknown variety,	90.3	85.2	86.6
615 Irish Cobbler,†	52.	47.7	44.4	652 Prof. Maerker,	10.3	10.4	11.3
616 Keeper,	9.4	14.	12.1	653 Rural Blush,	33.	53.8	55.8
617 Late Blightless,	36.1	32.4	33.5	654 June,	33.3	34.5	29.6
618 Norcross,	66.9	78.3	67.5	1 Dakota Red,	28.1	37.2	31.5
619 Million Dollar,	53.3	30.7	41.9	9 Rust Proof,	66.	83.3	71.5

NOTE.—No. 1, 85 grams (3 oz.) or more in weight; No. 2, 45-85 grams (1.5-3 oz.) in weight; total, Nos. 1 and 2 with culls weighing less than 45 grams.

TABLE VIII. PERCENT OF VINES GREEN SEPTEMBER 11—OCTOBER 2, 1905, GRAVELLY CLAY LOAM

FIELD NUMBER AND NAME	DATE—11	14	16	19	20	23	26	28	30	2
108 Seedling	85	85	85	80	75	75	75	75	70	55
111 "	90	85	85	75	70	60	50	50	40	15
113 "	85	80	75	70	55	35	25	20	15	5
121 "	85	82	80	75	60	40	30	20	12	3
133 "	95	90	90	85	75	70	60	55	30	2
141 "	90	80	80	75	70	65	50	50	35	15
1 Dakota Red	75	65	60	12	3	0	..	..	..	..
2 Sir Walter Raleigh	40	30	25	10	0	0	..	..	..	..
3 Green Mountain	60	40	30	10	0	0	..	..	..	..
4 June	90	80	75	50	40	10	3	3	2	0
5 Mammoth Gem	70	60	55	15	10	0	..	..	..	..
6 Mexican	85	80	75	12	5	0	..	..	..	..
7 Minister	ripe									
8 New Queen	60	40	30	10	0	0	..	..	..	..
9 Rust Proof	90	85	85	75	70	70	65	52	40	15
10 Peruvian	90	85	80	25	5	0	..	..	..	..
11 Squier	20	10	10	8	0	0	..	..	..	..
12 State of Maine	50	40	35	15	0	0	..	..	..	..
13 *S. stoloniferum*	dead									
14 Discovery	75	70	70	70	70	65	65	65	65	60
16 *S. polyadenium*	95	90	90	90	90	90	90	85	85	85
17 Red Sport of Mexican	95	95	95	90	80	30	15	12	5	0
18 Early Rose	60	60	50	15	3	0	..	..	..	..
19 Norcross Seedling	60	60	55	25	10	0	..	..	..	..
S. tuberosum (wild species)	90	90	90	90	90	90	90	90	90	90
S. verrucosum	80	80	80	80	75	75	75	75	75	75
S. etuberosum	20	17	10	10	3	0	..	..	..	..
S. maglia	10	10	8	5	0	..	..	..	..	..

TABLE IX. PERCENT OF TUBERS ROTTEN, GRAVELLY CLAY LOAM, 1905

FIELD NUMBER AND NAME	No. 1	No. 2	Total
108 Seedling	19.7	47.3	22.1
111 "	50.	62.9	54.8
113 "	65.2	50.	45.1
121 "	64.9	70.8	64.6
133 "	83.	62.2	76.7
141 "	43.4	80.	60.1
1 Dakota Red	3.5	13.5	9.5
2 Sir Walter Raleigh	39.1	50.	50.
3 Green Mountain	81.5	69.2	76.4
4 June	3.9	0	2.8
5 Mammoth Gem	71.1	57.1	67.2
6 Mexican	0	0	18.9[1]
7 Minister	49.2	63.8	51.3
8 New Queen	61.1	67.3	56.8
9 Rust Proof	20.8	51.8	32.2
10 Peruvian	....	....	75.5[1]
11 Squier	30.	70.4	39.
12 State of Maine	65.5	57.6	64.
13 *S. stoloniferum*	....	....	66.6[1]
14 Discovery	100.	0	3.4
16 *S. polyadenium*	0	0	0
17 Red Sport of Mexican	0	0	23.2[1]
18 Early Rose	49.2	57.8	49.6
19 Norcross Seedling	62.1	77.4	66.6
20 *S. tuberosum* (wild species)	0	0	0
21 *S. etuberosum*	0	0	0
22 *S. maglia*	0	0	0
23 *S. verrucosum*	no tubers		

[1]There were no No. 1 or 2 tubers.

ALPHABETICAL LIST OF VARIETIES. SOURCE, SEASON AND FOR WHAT RECOMMENDED.

No.	Variety	From whom obtained	Originator	Season	For what recommended
563	Acme,	T. A. Scarlett, Edinburgh, Scot.		7	high dis. resistance
637	Alex.No.1 Red,	O. H. Alexander, Charlotte, Vt.	Alex.	7	resistance to disease
648	Alex.No.4 Red,	O. H. Alexander, Charlotte.	Alex.	5	for trial
649	Alex.No.7 Red,	O. H. Alexander, Charlotte.	Alex.	5	" "
640	Alex.No.10 Red,	O. H. Alexander, Charlotte.	Alex.	5	" "
643	Alex.No.50 Red,	O. H. Alexander, Charlotte.	Alex.	5	" "
644	Alex.No.100Red,	O. H. Alexander, Charlotte.	Alex.	5	" "
650	Alex. Seedling,	O. H. Alexander, Charlotte.	Alex.	5	" "
651	Alex. Seedling,	O. H. Alexander, Charlotte.	Alex.	5	" "
599	Am. Wonder,	B. A. Corbett, Colebrook, N. H.		5	high dis. resistance
517	Apollo,	Prof. Eckenbrecker, Berlin, Germany.	Paul.	7	res. to rot and scab
634	Babbitt,	E. A. Rogers, Brunswick, Me.		6	good dis. resistance
524	Belle de Font.,	Vilmorin Andrieux & Cie., Paris, France.		1	for trial
528	Belle de Juillet,	Vilmorin Andrieux & Cie., Paris, France.		2	" "
610	Blight Proof,	C. F. Vanderhoff, Elmira, N. Y.		6	freedom from blight
514	Boncza,	Prof. Eckenbrecker, Berlin, Germany.	Dolk.	6	res. to rot and scab
600	Boss,	L. B. Surdam, No. Bennington, Vt.	Surd.	4	res. to blight & rot
525	Brandale,	Vilmorin, Andrieux & Cie., Paris, France.		1	for trial
574	British Queen,	Cambridge Univ., Cambridge, Eng.	Fdly.	2	moderate dis. res.
591	British Queen,	A. Findlay, Auchtermuchty, Scot.	Fdly.	2	fair dis. resistance
601	Buffalo,	R. E. Gould, Lisbon, Me.		6	res. to blight & rot
602	Camb. Russet,	Frank Paddock, Perry, N. Y.		6	resistance to scab
527	Chave (Shaw),	Vilmorin Andrieux & Cie, Paris, France.		2	resist. to late blight
539	Chas. Fidler,	T. A. Scarlett, Edinburgh, Scot.		6	disease resistance
576	Chas. Fidler,	Cambridge Univ., Cambridge, Eng.		6	fair dis. resistance
603	Clarke's Pride,	E. E. Parkhurst, Presque Isle, Me.		2	resistance to blight
538	Cram. Blossom,	T. A. Scarlett, Edinburgh, Scot.		3	disease resistance
585	Cram. Blossom,	Cambridge Univ., Cambridge, Eng.		3	for trial
604	Crine's Light.,	R. V. Crine, Morganville, N. J.		1	resistance to blight
546	Crofter,	T. A. Scarlett, Edinburgh, Scot.		4	med. disease resist.
502	Dabersche,	Prof. Eckenbrecker, Berlin, Germany.		6	standard food potato
523	Daisy,	U. J. Mansholt, Groningen, Holland.		7	resist. to late blight
605	Dakota Red,	Geo. W. P. Jerrard, Caribou, Me.		7	high resist. to rot
553	Dal. Early,	T. A. Scarlett, Edinburgh, Scot.		2	high dis. resistance

No.	Variety	From whom obtained	Originator	Season	For what recommended
545	Dal. Kidney,	T. A. Scarlett, Edinburgh, Scot		4	" " "
552	Dal. Red,	T. A. Scarlett, Edinburgh, Scot		7	high dis. resistance
606	Delaware,	Geo. W. P. Jerrard, Caribou, Me		7	disease resistance
535	Discovery,	Sutton & Sons, Reading, Eng	Sut.	7	high dis. resistance
565	Discovery,	Cambridge Univ., Cambridge, Eng	Sut.	7	" " "
607	Doe's Pride,	E. E. Parkhurst, Presque Isle, Me		7	disease resistance
580	Duch. of Corn.,	Cambridge Univ., Cambridge, Eng		2	" "
587	Duke of Roth.,	Cambridge Univ., Cambridge, Eng			for trial
541	Duke of York,	T. A. Scarlett, Edinburgh, Scot		2	good dis. resistance
589	Duke of York,	Cambridge Univ., Cambridge, Eng		2	" " "
579	Dum. Model,	Cambridge Univ., Cambridge, Eng		1	disease resistance
526	Early Rose,	Vilmorin Andrieux & Cie., Paris, France		2	for trial
519	Eigenheimer,	U. J. Mansholt, Groningen, Holland		2	resist. to late blight
598	Eldorado,	A. Findlay, Auchtermuchty, Scot	Fdly.	7	high dis. resistance
593	Emp. Kidney,	A. Findlay, Auchtermuchty, Scot	Fdly.		disease resistance
590	Emp. Queen,	Cambridge Univ., Cambridge, Eng		7	for trial
608	Enormous,	Geo. W. P. Jerrard, Caribou, Me		7	disease resistance
532	Epicure,	Sutton & Sons, Reading, Eng	Sut.	2	" " "
521	Eureka,	U. J. Mansholt, Groningen, Holland		3	resist. to late blight
570	Evergood,	Cambridge Univ., Cambridge, Eng	Fdly.	7	high dis. resistance
594	Evergood,	A. Findlay, Auchtermuchty, Scot	Fdly.	6	" " "
540	Factor,	T. A. Scarlett, Edinburgh, Scot		7	for trial
581	Factor,	Cambridge Univ., Cambridge Eng	Chap.	7	good dis. resistance
575	Fidler's Seed.,	Cambridge Univ., Cambridge, Eng		6	for trial
568	Flour Ball,	Cambridge Univ., Cambridge, Eng	Sut.	7	high dis. resistance
516	Fuerst Bls.,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	7	dis. resist. to rot
510	Gastold,	Prof. Eckenbrecker, Berlin, Germany	Dolk.	6	general dis. resist.
500	Geh. Theil.,	Prof. Eckenbrecker, Berlin, Germany	Rich.	7	high dis. resistance
518	Gelbf. Sp. Kart.,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	7	typical yel.-fleshed
641	Gem,	O. H. Alexander, Charlotte, Vt		4	for trial
609	Gem of Aroos.,	Geo. W. P. Jerrard, Caribou, Me		7	disease resistance
571	Goodfellow,	Cambridge Univ., Cambridge, Eng	Fdly.	7	high dis. resistance
595	Goodfellow,	A. Findlay, Auchtermuchty, Scot	Fdly.	7	" " "
611	Green Mt.,	Geo. W. P. Jerrard, Caribou, Me		6	resistance to rot
612	H. Snowball,	Joseph Harris Co., Coldwater, N. Y		6	res. to blight & rot
645	Havana,	O. H. Alexander, Charlotte, Vt		4	for trial
564	Heather Blos.,	T. A. Scarlett, Edinburgh, Scot		7	fair dis. resistance
613	Holb. Abund.,	W. T. Macoun, Ottawa, Can		6	high dis. resistance
567	Ideal,	Cambridge Univ., Cambridge, Eng	Sut.	4	for trial
582	Imp. Kidney,	Cambridge Univ., Cambridge, Eng	Dobl.		" "
614	Ionia Seedling,	Edwin F. Dibble, Honeoye Falls, N. Y		6	high blight resist.
505	Irene,	Prof. Eckenbrecker, Berlin, Germany	Paul.	6	resist. to rot & scab
615	Irish Cobbler,	Geo. W. P. Jerrard, Caribou, Me		2	resistance to rot
654	June,	Vt. Exp. Sta., Burlington, Vt		7	res. to blight & rot
616	Keeper,	B. A. Corbett, Colebrook, N. H		6	resist. to rot & scab
537	King Edw.VII,	T. A. Scarlett, Edinburgh, Scot	Btlr.	4	for trial
583	King Edw.VII,	Cambridge Univ., Cambridge, Eng	Btlr.	4	good dis. resistance
520	Landskroon,	U. J. Mansholt, Groningen, Holland		3	resist. to late blight
542	Langworthy,	T. A. Scarlett, Edinburgh, Scot		7	high dis. resistance
586	Langworthy,	Cambridge Univ., Cambridge, Eng		7	disease resistance
617	L. Blightless,	Marshall & Noble, Lyons, N. Y		7	freedom from blight
515	Leo,	Prof. Eckenbrecker, Berlin, Germany		6	some dis. res; pro've
504	Mag. Bonum,	Prof. Eckenbrecker, Berlin, Germany	Sut.	6	resist. to late blight
522	Malador,	U. J. Mansholt, Groninger, Holland		7	" " "
646	Maule's Rel'ce,	O. H. Alexander, Charlotte, Vt		6	for trial
508	Max Eyth,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	7	high res. to late bl't
530	May Queen,	Sutton & Sons, Reading, Eng	Sut.	1	for trial
555	Mld. Early,	T. A. Scarlett, Edinburgh, Scot		2	high dis. resistance
619	Million Dollar,	Flansburgh & Pierson, Leslie, Mich		7	good dis. resistance
509	Mohort,	Prof. Eckenbrecker, Berlin, Germany	Dolk.	6	high res. to rot&scab
578	Monarch,	Cambridge Univ., Cambridge, Eng	Ctr.	1	for trial
560	Money Maker,	T. A. Scarlett, Edinburgh, Scot		7	high dis. resistance
531	Ninety-fold,	Sutton & Sons, Reading, Eng	Sut.	1	some dis. resistance
569	Ninety-fold,	Cambridge Univ., Cambridge, Eng	Sut.	1	" " "
618	Norcross,	D. C. Hicks, No. Clarendon, Vt	J.S.P.Co.	6	resistance to blight
620	Norcross,	E. A. Rogers, Brunswick, Me	J.S.P.Co.	6	good dis. resistance
549	North. Star,	T. A. Scarlett, Edinburgh, Scot	Fdly.	7	disease resistance

No.	Variety	From whom obtained	Originator	Season	For what recommended
573	North. Star,	Cambridge Univ., Cambridge, Eng	Fdly.	8	high dis. resistance
597	North. Star,	A. Findlay, Auchtermuchty, Scot	Fdly.	6	high dis. resistance
621	Or. Blossom,	W. E. Robinson, Newport, Vt.		6	res. to blight & rot
639	Orlando,	O. H. Alexander, Charlotte, Vt.		4	for trial
642	Pasadena,	O. H. Alexander, Charlotte, Vt.		4	" "
551	Peace Maker,	T. A. Scarlett, Edinburgh, Scot.		7	high dis. resistance
550	Pink Blossom,	T. A. Scarlett, Edinburgh, Scot.		7	fair dis. resistance
548	Premier,	T. A. Scarlett, Edinburgh, Scot.		4	high dis. resistance
511	Pres. Krueger,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	7	productiveness
506	Prof. Maerker,	Prof. Eckenbrecker, Berlin, Germany	Rich.	6	resist., espec. scab
652	Prof. Maerker,	W. T. Macoun, Ottawa, Can.	Rich.	6	high dis. resistance
512	Prof. Wohlt.,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	7	high res. to rot&scab
529	Q. de la Halle,	Vilmorin Andrieux & Cie., Paris, France		3	for trial
622	Quick Lunch,	W. Atlee Burpee, Philadelphia, Pa.		1	res. to blight & rot
562	Radium,	T. A. Scarlett, Edinburgh, Scot.		7	high dis. resistance
559	Red Kidney,	T. A. Scarlett, Edinburgh, Scot.		2	disease resistance
503	Richter's Imp.,	Prof. Eckenbrecker, Berlin, Germany	Rich.	7	res. to scab; prolific
588	Royal Kidney,	Cambridge Univ., Cambridge, Eng	Fdly.	4	high dis. resistance
592	Royal Kidney,	A. Findlay, Auchtermuchty, Scot	Fdly.	4	" " "
653	Rural Blush,	W. T. Macoun, Ottawa, Can.		6	" " "
623	R.N.Y.No. 2,	Geo. W. P. Jerrard, Caribou, Me.		6	" " "
624	Scab Proof,	John A. Sulzer Seed Co., LaCrosse, Wis.		6	high res. to scab
547	Scot. Queen.	T. A. Scarlett, Edinburgh, Scot.		4	fair dis. resistance
554	Sharp's Exp.,	T. A. Scarlett, Edinburgh, Scot.		2	high dis. resistance
507	Silesia,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	8	fair dis. resistance
536	Sir J. Llew.,	T. A. Scarlett, Edinburgh, Scot.	Har.	1	tendency to sport
584	Sir J. Llew.,	Cambridge Univ., Cambridge, Eng	Har.	2	high dis. resistance
561	Sir T. Lipton,	T. A. Scarlett, Edinburgh, Scot.		7	high dis. resistance
625	Sir W. Raleigh,	Geo. W. P. Jerrard, Caribou, Me.		6	resistance to rot
577	Snowball,	Cambridge Univ., Cambridge, Eng	Ctr.	7	for trial
501	Sophie,	Prof. Eckenbrecker, Berlin, Germany	Cimb.	7	fair dis. resistance
556	South. Queen,	T. A. Scarlett, Edinburgh, Scot.		2	disease resistance
626	Star of East,	E. A. Rogers, Brunswick, Me.		6	blight resistance
627	State of Maine,	Vt. Exp. Sta., Burlington, Vt.		7	disease resistance
647	Sunset,	O. H. Alexander, Charlotte, Vt.		4	
533	Supreme,	Sutton & Sons, Reading, Eng.	Sut.	4	resist. to Schwarzbeinigkeit
566	Supreme,	Cambridge Univ., Cambridge, Eng.		4	
628	S. Snowflake,	W. T. Macoun, Ottawa, Can.		6	high dis. resistance
636	*S.commersonii,*	J. R. Lawrence, N. Middleboro, Mass.		7	" " "
544	Table Talk,	T. A. Scarlett, Edinburgh, Scot.		7	" " "
513	Topaz,	Prof. Eckenbrecker, Berlin, Germany	Dolk.	3	" " "
543	Tyne Kidney,	T. A. Scarlett, Edinburgh, Scot.		7	" " "
633	Unnamed Pink,	R. H. Bristol, Vergennes, Vt.		6	res.to blight,rot,scab
635	Seedling,	Chas. M. Clark, Pawlet, Vt.		6	resistance to rot
572	Up-to-Date,	Cambridge Univ., Cambridge, Eng	Fdly.	8	mod. disease resist.
596	Up-to-Date,	A. Findlay, Auchtermuchty, Scot	Fdly.	8	" " "
629	Vt. Gold Coin,	W. Atlee Burpee, Philadelphia, Pa.		7	resistance to blight
638	Washington,	O. H. Alexander, Charlotte, Vt.		6	
557	Webber's Early,	T. A. Scarlett, Edinburgh, Scot.		2	high dis. resistance
630	Westfield,	D. C. Hicks, No. Clarendon, Vt.		6	res.to blight,rot&scab
631	White Beauty,	E. E. Parkhurst, Presque Isle, Me.		6	blight & scab resist.
558	White Blossom,	T. A. Scarlett, Edinburgh, Scot.		4	med. disease resist.
632	W.Scotch King,	N. P. Johnson, Crookston, Minn.		7	
534	Wind. Castle,	Sutton & Sons, Reading, Eng.	Sut.	2	high table quality

Originators.—Alex., Alexander; Btlr., Butler; Ctr., Center; Chap., Chapman; Cimb., Cimbal; Dobl., Doblie; Dolk., Dolkowski; Fdly., Findlay; Har., Harris; J. S. P. Co., Johnson Seed Potato Co.; Paul., Paulsen; Rich., Richter; Surd., Surdam; Sut., Sutton & Sons.

Season—1, very early; 2, early; 3, medium early; 4, medium; 5, medium to late; 6, medium late; 7, late; 8, very late.